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INDUSTRIAL WORLD

Published Weekly in the Interest of Iron, Steel, Coke and Allied Industries.

Year. No. 33.

PITTSBURGH, PA.

MONDAY, AUGUST 16, 1909.

SCAIFE and WE-FU-GO WATER SOFTENING and PURIFYING SYSTEMS SUPPLY

NON SCALING and NON CORRODING

FEED WATER

SCALE FORMING and ACID WATERS EFFECTS and EXPENSES

scale
corrosion
burned plates and tubes
boiler cleaning
boiler repairs
spare boilers
shut-downs at critical times
Expense for compounds
Low rate of evaporation
Cleaning heaters
Reduced efficiency of heaters
Renewing corroded or scaled feed pipes
Waste of fuel

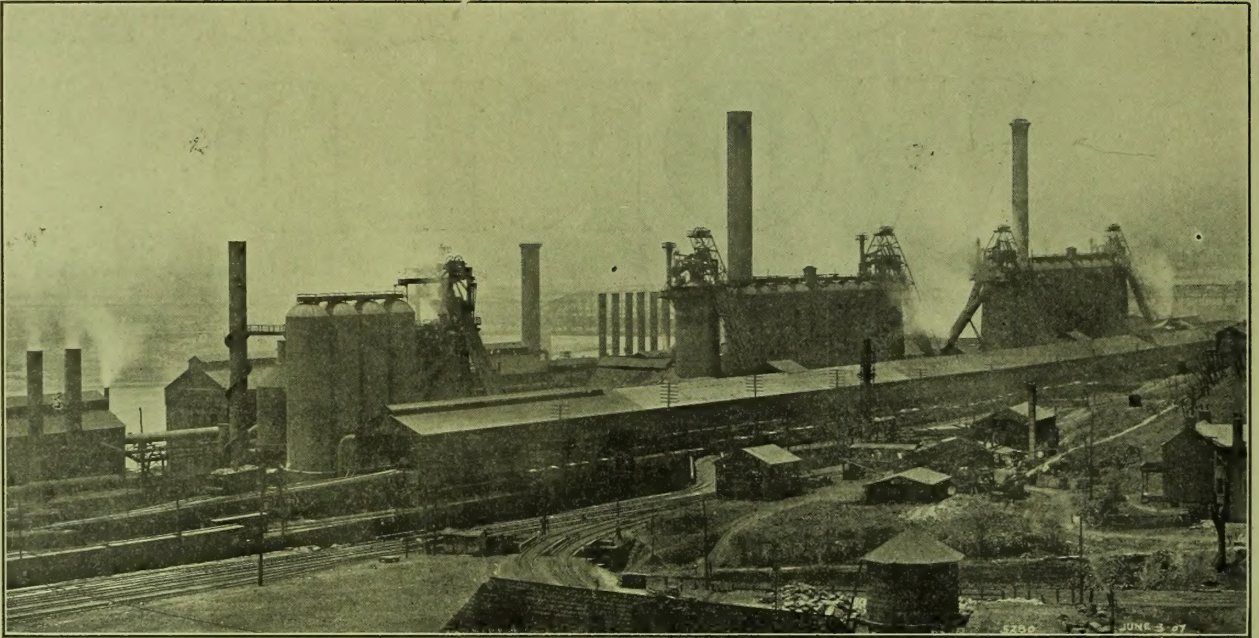
SOFTENED and PURIFIED WATER Advantages and Economies

No scale
No corrosion
No turbinizing
No spare boilers required
No corrosion or clogging of feed lines
No cleaning of heaters
High rate of evaporation
Highest efficiency from heaters
No shut-downs
Minimum repairing
No burning of plates or tube failures from scale
No waste of fuel [or corrosion]
Lowest possible cost of boiler maintenance

WM. B. SCAIFE & SONS CO., PITTSBURGH, PA.

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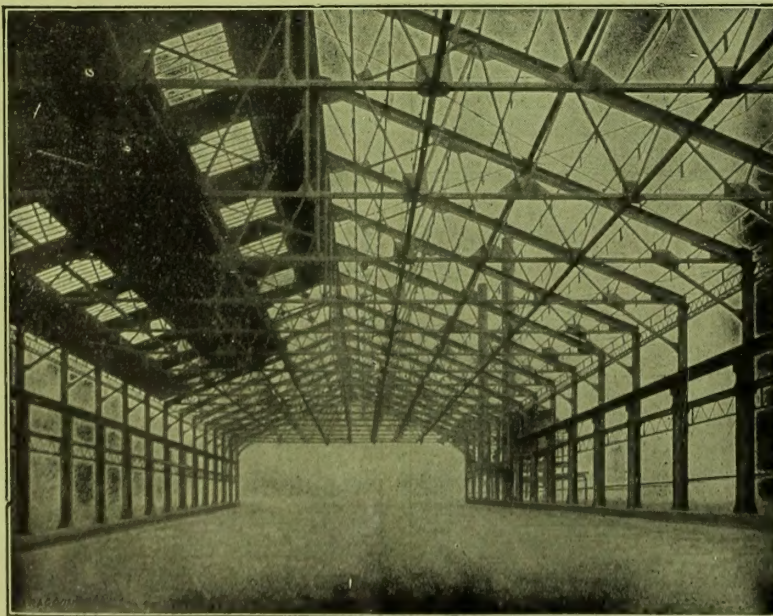
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INDUSTRIAL WORLD

FORTY-THIRD YEAR.

PITTSBURGH, PA., AUG. 16, 1909.

NUMBER THIRTY-THREE.

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Summary of General Iron and Steel Markets

RAILROADS EMPHASIZE MARKET'S HEALTHY TONE BY EXTENSIVE BUYING—PROMISE OF NEW HIGH MARKS IN FINISHED LINES AS WELL AS IN IRON TONNAGE AND ORE MOVEMENTS BY NEXT MONTH—STIFFENING OF PRICES IN IRON IN ALL CENTERS—CONSUMERS UNDERESTIMATE NEEDS FOR PRESENT YEAR, AND PROMISE FURTHER BUYING—WINTER RAIL ORDERS A PROBABILITY—STRUCTURAL TRADE AND CAR BUILDERS SERIOUSLY EMBARRASSED BY DELAYED DELIVERIES.

WITH a practical certainty that the United States Steel Corporation will break all its records in pig iron production and ore movements during the month of August, the placing by the railroads during the week just closed of extensive orders for rails, cars and construction and structural work, indicates that by September the combine's output in finished materials also will be in excess of all previous rush periods.

The one weak spot in the iron and steel situation up to the present month was that the railroads were not buying. Now the railroads have bought. Orders for standard rails placed during the week by the big lines aggregated nearly 50,000 tons, including the Baltimore & Ohio's order for 20,000 tons, of which 12,000 tons is for Bessemer. Construction work by the Pennsylvania on its lines west of Pittsburgh, and orders for 25,000 more steel cars, have finally convinced the steel trade that the railroads at last are ready to join the buying movement.

The Steel Corporation is now operating about 92 per cent of its blast furnace capacity, the highest level it has reached since October, 1907. Its output for the current month will be at a rate of close to 13,000,000 tons per annum. Its record in 1906 was 11,267,000 tons. It is claimed the Corporation's iron out-

put at the present time is equivalent to about 102 per cent of its total capacity in 1907.

Scarcity of labor in machine shops, mines and coke fields, is proving a handicap. The new billet mill at Gary is to begin rolling the present week, which may relieve the practical famine in billets now felt in Chicago. Throughout the west, prompt deliveries of billets and bars are almost impossible to obtain. In all quarters, it is confidently asserted that the danger of a midsummer lull is now safely past, and that October will find finished steel on a higher basis than now ruling, say 1.40c for bars and 1.50c for plates and shapes.

Prices stiffened in almost all grades of iron during the week just ended. Two large sales of Bessemer reported in Pittsburgh aggregated 25,000 tons, with several interests just about ready to close for an aggregate of 50,000 tons additional. There are large inquiries in the basic market, and sales reported of some 19,000 basic and foundry grades at slightly higher price levels. In the East, many buyers find they have underestimated their requirements, and promise to be back in the market before the end of the present quarter. It is believed this situation presages another invasion of the Pittsburgh market by Eastern buyers in the early fall.

Bessemer still remains strong in Pitts-

burgh district at \$16, Valley, which is \$16.90, Pittsburgh. In the forge and foundry grades, there is a wide range, No. 2 foundry having been reported sold as low as \$15.25, Valley, while \$15.50, and even a higher price has been paid. Southern irons show still greater firmness, \$13, Birmingham, being the minimum price for No. 2, with some interests quoting \$13.50.

One incident largely commented on in Pittsburgh market was the appearance of the Standard Steel Car Company in the market with an inquiry for 100,000 tons of basic iron for delivery during 1910, to supply the new steel plant it has under contract at Butler. Furnace interests were loath to quote on that quantity of iron so far ahead.

Reports from New York tell of an inquiry by one big railroad system for 60,000 tons of rails for delivery during 1910. The mills would welcome this opportunity for winter work, which, it is argued, probably would equalize heavy demands on blast furnace capacity next summer. The attitude of the railroads toward the present situation is shown by the action of the Pennsylvania in preparing to build over 2,000 steel cars at its Altoona shops between now and next June. Supplemental orders by the Pennsylvania for 2,600 freight cars; by the New York Central for 2,500; by the Burlington for 1,000 in addition to its order of 10 days ago, and by the Baltimore & Ohio for the first 3,600 of its 8,000-car order, indicate an increasingly heavy demand for plates and car parts.

The structural trade is seriously embarrassed by delayed deliveries. A stiffening of prices would not be surprising, in view of the present activity. Fabricators are constantly waiting on materials.

August will probably make a new record for ore shipments. Ore men are now figuring on a total lake movement of 38,000,000 to 39,000,000 tons. Conneaut's ore receipts for July were 1,250,034 tons, which is said to set a new world's record for one port for one month.

The new tariff had no general effect on the iron and steel industry—aside from the great effect of the bugaboo being "out of the way." There were no inquiries for foreign bars, shapes and sheets, as it was freely predicted some months ago there would be. There is some confusion in alloys, but otherwise the trade took the announcement of the new duties in a thoroughly sane manner.

Pittsburgh District Developments Depicted During the Week

RUSH FOR STEEL CARS.

With the letting of a second important steel car contract by the Pennsylvania and the announcement, finally, of the Baltimore & Ohio's first allotment of 3,600 freight cars and 70 high-class passenger, baggage and postal coaches, the developments of the last half of the week just ended gave promise of the operation of the carshops of the country on extra turn before the close of the year.

The Baltimore & Ohio still has a part of its freight car allotment yet to announce. It is rumored that it is withholding a part of the allotment pending developments in the strike at the Pressed Steel Car plant, Pittsburgh, which still hangs fire, to the distress of some of the trunk line interests that are anxious for cars. With this exception, and with the prospect of a supplemental order from the Pennsylvania before the close of the year, it is believed the big railroads are nearly all in with their orders for the current season.

The Baltimore & Ohio's order, announced August 12 its present distribution as follows: Standard Steel Car Company, 1,000 composite gondolas, 1,000 coke cars; Cambria Steel Company, 600 all-steel hopper cars and 10 baggage cars, five cafe and parlor cars, five all-steel postal cars to the Barney & Smith Car Company, Dayton, O.

The Pennsylvania Company on August 10 placed an additional order for 2,600 coke cars, 2,000 will be built by the Standard Steel Car Company, at its Butler and Hammond shops, and 600 by the Cambria Steel Company. The Pressed Steel Car Company is already behind in its orders from the Pennsylvania, and consequently none of this allotment was placed with them.

This order is the remainder of the 8,000 cars for which the company had asked figures and to be paid for out of the \$8,000,000 recently set aside for the purchase of new rolling stock.

The cars will be larger and of greater capacity than any other coke car heretofore constructed, having an inside measurement of 40 feet and a capacity of 90,000 pounds of coke. This new type will be 10 feet longer than the type at present in use on the Pennsylvania lines and will have two hoppers, making them absolutely self-emptying.

The Pennsylvania Lines West have been pressed for coke cars for some time due to the great activity in the iron business in the West. With the completing and blowing in of the

furnaces at Gary, Ind., and the continued activity of the blast furnaces at South Chicago, Milwaukee and other places in the Chicago district and also of the Mahoning Valley the Pennsylvania Lines will continue to haul an ever-increasing amount of coke.

The Pennsylvania also is preparing to build steel cars at its Altoona shops. A total of 2,060 steel cars were ordered built at Altoona. The order is to be completed by June 1, 1910. This order is said to be equivalent to 3,500 wooden cars.

The Altoona car shops are just now in a transformation period and soon about all the woodmaking machinery that made the shops the greatest of the kind in the world will be supplanted by tools for the working of steel.

In addition to the Pennsylvania contracts enumerated, others for 1,000 box cars, 500 refrigerator cars and 500 ventilated cars, 60 locomotives and two electric locomotives will be placed upon the completion of the negotiations now pending.

The Burlington, in addition to the 500 steel gondolas ordered from the Pressed Steel Car Company a week ago, is taking prices on 500 steel flat cars and 500 stock cars. The New York Central has divided an order for 2,500 box cars among the Standard Steel Car Company, the American Car & Foundry Company, and one other eastern concern. The Northern Pacific has ordered 1,800 wooden box cars from the Pullman Car Company, and 200 from the Seattle Car Company.

The Atchison, Topeka & Santa Fe gave its first large passenger equipment order in several years, which calls for 130 passenger coaches. All will be built by the Pullman Company. The order of the Hill railroads for 57 locomotives, from the Baldwin Company, which was closed last week, represents an estimated outlay of \$1,000,000.

Of the 3,000 steel cars the Pennsylvania has ordered for the Lines West of Pittsburgh, 2,100 will be all steel, and the remainder will be steel underframe. All of the 3,000 for the lines east of Pittsburgh, will be all steel and will require, it is estimated, about 42,000 tons of steel for plates. In filling the requirements for the other necessities in the construction of these cars, the trade will be given a broader tone than is realized at first glance. The number of spiral springs required, amount to 192,000. In addition there will be needed 6,000 airbrakes, which the Westinghouse Air Brake Company will furnish; 48,

000 wheels, 24,000 axles and 12,000 couplers.

During July the railroads ordered approximately 25,000 cars, whereas during June they ordered only 7,615 cars. Among the largest orders was that placed by the Harriman lines for 4,945 cars. Among the new inquiries for cars is that of the Rock Island, which is for 1,000 furniture cars and 1,000 box cars.

EFFORTS TO SETTLE CAR STRIKE FAIL.

Efforts thus far to settle the disastrous strike at the McKees Rocks plant of the Pressed Steel Car Company have failed. Some concessions have been offered by the company, but the men are standing out with remarkable firmness. The first fatality of the strike occurred August 12, when a Croatian striker was slain by a negro workman, and considerable disorder followed, in which the State constabulary once more showed their worth.

The striking employees succeeded on August 11 in securing a rule from the Allegheny county courts ordering the company to show cause why it should not name three arbitrators to act with three to be named by the strikers and three by the court to adjust the differences existing between the car company and its men.

The matter of arbitration will be argued August 18. The petition was filed under the State law of 1893, which provides that, in case either side to an industrial dispute refuses to appoint arbitrators the court is authorized to name six.

The striking employees notified the company early in the week that unless the demands were granted the strike would be extended to every plant of the company.

There are plants at Hegewisch, Ill.; Montreal, Anniston, Ala., and Woods Run. The Woods Run plant, however is not operating, though preparations are being made to resume there in part.

DOCKS FOR J. & L.

Colonel J. M. Schoonmaker, vice president and general manager of the Pittsburgh & Lake Erie Railroad, has announced that the Jones & Laughlin Steel Company, in connection with two others, has leased the east side of the new lake front slip at Ashtabula, a part of the \$4,000,000 improvement planned by the Lake Shore Railroad. The equipment and improvements amounting to \$3,000,000 will be completed by the opening of navigation next year.

BUSY FALL FOR ERECTORS.

Eastern companies are becoming well filled up on bridge and structural contracts, and it seems likely that by the last of the month builders will be unable to rush work as they did earlier in the summer. Among the railroad contracts let during the week just ended, the McClintic-Marshall Construction Company secured one from the Philadelphia & Reading to replace about 18 wooden bridges along the Perkiomen branch with steel structures. The contract calls for about 1,000 tons. The Baltimore & Ohio gave the contract for the Scherzer rolling lift bridge across the Cuyahoga river at Cleveland to the Pennsylvania Steel Company, of Steelton, Pa., for the superstructure, and Charles A. Sims & Company, of Philadelphia, for the sub-structure. The bridge, which replaces a drawbridge of the swing type, will be of single leaf design, 200 feet long to center of bearings, and will call for about 1,100 tons of steel.

The South Fork bridge, for highway and electric traffic, over the Southern & Cambria tracks at Johnstown, will be built by the Ft. Pitt Bridge Company, of Pittsburgh. The contract was let August 9 by Engineer G. Gudmansson, Pittsburgh. It will be 525 feet long, and will require about 250 tons of steel. The Ft. Pitt Bridge Company also shares with the Kenwood Bridge Company, of Chicago and the Toledo-Massillon Bridge Company, contracts from the Chicago Sanitary district, for three bridges there, aggregating 500 tons.

The contract for the Standard Oil office building, in Pittsburgh, aggregating 800 tons, was secured by the Thompson-Starrett Company, New York and Pittsburgh. The building will be a steel frame fireproof structure with a frontage of 40 feet, a depth of 110 feet and 11 stories high with two sub-basements. Contracts also are pending for the concrete and structural work for the proposed new plant of the General Chemical Company, at Newell, near Brownsville, Pa., on the Pittsburgh & Lake Erie Railroad. Among other lettings reported in bridge and structural contracts are these:

Fairfield, Me.—Bridge over Kennebec river, contract to American Bridge Company, at \$27,630. Other bids for superstructure were: Penn Bridge Company, \$30,680; Pennsylvania Steel Company, \$37,600, and Canton Bridge Company, \$32,395.

Harrisburg, Pa.—Steel girder bridge over Philadelphia & Reading, awarded to Stucker Brothers' Construction Company, of Harrisburg, for \$19,940. Other bids received were: Central Construction Company, \$22,829.25; Ferro Con-

crete Company, \$22,950; York Bridge Company, York, \$24,300; W. O. Weaver & Son, \$20,976; R. R. Ferno, \$22,369; Nelson-Merydith Company, Chambersburg, \$22,506; McCormick Company, Philadelphia, \$20,900.

Louisville, Ky. — The Westlake Construction Company, of St. Louis, secured the contract to erect for B. F. Avery & Sons a new plant consisting of 11 buildings and costing about \$340,000. The Louisville Bridge & Iron Company will furnish the steel and iron work.

DOUBLES ITS CAPITAL.

At a meeting on August 6, the stockholders of the United States Steel Company, of Canton, O., decided to increase the capital stock of the company from \$750,000 to \$1,500,000. The doubling of the capitalization means the doubling of the size of the plant in the immediate future.

As quickly as contracts can be let and the work completed the output of the company will be increased to twice the production under the present capacity. The company now has three 50-ton furnaces. Three more 50-ton furnaces will be added as soon as these furnaces are built and ready for operation. Between \$300,000 and \$400,000 will be expended in improvements.

ENLARGING SHEET MILLS.

United Engineering & Foundry Co., Pittsburgh, has been awarded a contract for equipment for a large addition to the sheet mill of the Inland Steel Company's plant at Indiana Harbor, Ind. The contract calls for eight stands of hot rolls, four stands of cold rolls and the necessary roughing rolls, which, when completed will give the company an 18-mill plant.

Contracts for the necessary buildings of steel construction have been awarded to the Moravia Construction Company, Chicago; heavy duty engine to the Mesta Machine Company, Pittsburgh; and four electric cranes to the Alliance Machine Company, Alliance, Ohio.

MILLS OBSTRUCT RIVER.

Youngstown, O., councilmen are accusing the Carnegie Steel Company, of damming the Mahoning river at that place by the dumping of slag from the Ohio works. Representatives of the Carnegie Company assured the city that the company had put in the dam only temporarily to secure water to operate the plant. It is claimed a trestle has been built out over the river, and hot cinder is being dumped in the river bed. The city has been advised to bring injunction proceedings.

CLOSE DEAL FOR OLD FURNACE.

The sale of the Alice Furnace of the Youngstown Sheet & Tube Company, to the Thomas D. West Company, of Youngstown, was closed early in the week. The consideration is not made public. The stack is one of the oldest in the Youngstown-Shenango district, being equipped with the old-time iron pipe stoves. Its capacity is said to be 90,000 tons annually. It has been kept in good repair, and was rebuilt in 1897. A number of years ago the Youngstown Sheet & Tube Company purchased the stack of Pickands, Mather & Company, of Cleveland. Last November, however, the Youngstown Sheet & Tube Company put in blast its two new furnaces in Youngstown, contiguous to its plant there. The company gives possession at the Alice stack in one year, by which time it probably will have a third furnace well under way. The two new furnaces of the Sheet & Tube Company, now in operation at Youngstown, have a combined capacity of four times the Sharpsville stack.

The principal output of the West foundry is ingot molds. When it takes over the Alice furnace, the company will probably be the only exclusive foundry concern in the country operating its own blast furnace. The West company has for several years secured its iron in molten form from the W. P. Snyder furnace at Sharpsville, which closely adjoins the foundry. The molten iron was supplied on a running contract, at current market figures.

HOISTING APPARATUS SOLD.

John A. Graff & Company, Pittsburgh, representatives of the Northern Engineering Works, Detroit, Mich., reports the following sales during the month: Keystone Bronze Company, Pittsburgh, 5-ton crane; Riter-Conley Manufacturing Company, Northside plant, Pittsburgh, 5-ton crane; Braddock Machine & Manufacturing Company, Braddock, Pa., 25-ton crane; Specialty Foundry Company, Elwood City, Pa., 5-ton crane; D. T. Riffle, Pittsburgh, three 5-ton turntables for industrial railway; William B. Scaife & Company, Pittsburgh, two air hoists.

TO MAKE STEEL CASTINGS.

The Braddock Machine & Manufacturing Company, Braddock, Pa., has arranged to engage in the manufacture of steel castings in addition to its regular foundry work. A 50-ton open hearth furnace is being constructed and contracts have been awarded for cranes and other equipment. The company expects to have the new department in operation by September 15.

BIDS ON POWER PLANT.

Contracts for a new power and heating plant for the Girls Industrial school, at Delaware, O., have been awarded as follows: Fitzpatrick & Hoepfner, Columbus, boilers, construction and concrete work, \$14,179; to Skinner Engineering Company, of Pittsburgh, Pa., one engine, \$1,285; to Hopper Manufacturing Company, Springfield, O., open feed-water heater, \$446; to Canton-Hughes Pump Company, Canton, O., boiler feed pumps and vacuum pumps, \$890; and to Simonton Construction Company, Columbus, for generator, erection and wiring, total \$7,790. Grand total \$41,763.

The Electric Light & Power Company has awarded the contract to the Buckeye Engine Company, of Salem, O., to install an electric light and irrigation plant on the edge of the artesian belt in Pecos Valley, near Artesia.

TO REBUILD INCLINE.

Notices were posted August 13 by P. N. Jones, general superintendent of the Pittsburgh Railways Company, that commencing August 16, the Pittsburgh Incline, commonly known as the Knoxville incline, will be shut down for 10 days, to permit of important improvements. The lower structural portion of the incline crossing Manor and Frederick streets and the Pittsburgh, Virginia & Charleston Railroad, will be rebuilt of heavy new steel, and will be strengthened to permit the use of heavier incline cars. The present cars were formerly used to carry street cars up and down and were very heavy and staunch, but the desire is to make the new cars even stronger. While the steel work is being erected the incline cars will be remodeled and increased in capacity. New and special safety devices will be installed.

COAL MEN ORGANIZE.

At a meeting August 10, in the Bessemer building, Pittsburgh, the organization of the Wabash-Pittsburgh Terminal Coal Operators' Association was effected.

The organization now effected comprises all of the operators along the Wabash Pittsburgh Terminal and represents a total investment of from seven to ten million dollars. The officers elected were: W. R. Turney, of Greensburg, Pa., president; T. Donohue, of Greensburg, Pa., secretary and treasurer. The executive committee consists of the two officers mentioned and A. C. Speyer, of Pittsburgh, Pa.

The executive committee, in whose hands will rest the policy of the association, will make no statement. It is rumored that the organization, while only formally organized, has really secretly

been in existence for a month or two, during which attorneys and statisticians have been gathering information to be used later in a fight for better service along the Terminal road. Members of the combination say the coal men, lured into the Wabash-Pittsburgh territory by promises of good car supply and good service, have been handicapped by the inadequate traffic arrangements.

REPUBLIC PUSHING PLANTS.

The Republic Iron & Steel Company is pushing its Western plants, some of the bar mills being run double turn. Improvements at the Brown-Bonnell plant, Youngstown, are progressing satisfactorily. Vice President T. J. Bray, on a recent inspection of the Youngstown properties, expressed himself as well satisfied with the progress made. Mr. Bray made the statement that the McClintic-Marshall Construction Company, of Pittsburgh, which has the contract for the building of the new tube plant for the company at Lansingville, had been requested to rush the construction work. Ground has already been broken for the new plant.

BEAVER FALLS IMPROVEMENTS.

The Union Drawn Steel Company, Beaver Falls, Pa., is increasing the capacity of its plant by the erection of a new power house and an addition to the main building. The latter building will be 100x150 feet. The company manufactures cold drawn shafting and rods.

The Ingram-Richardson Manufacturing Company, of the same place is adding 50x60-foot additions to two of its buildings. The products are enameled iron signs, one piece refrigerator linings and other enameled specialties.

TO RUN DOUBLE TURN.

The Fort Pitt Spring Company, Pittsburgh, is operating its plants at McKees Rocks, single turn, and the number of orders for railroad and industrial car springs recently received by the company has caused arrangements to be made to operate the plant double turn after September 1. The company is also increasing its capacity by installing a number of additional coiling machines in the plant.

BOILER TRADE IMPROVES.

R. Munroe & Sons Manufacturing corporation, proprietors of the West Point Boiler Works, Pittsburgh, are operating at capacity. The company recently received a number of orders for boilers, stacks and water tanks which will keep the employees busy for a considerable length of time.

FIGHT OVER INVENTION.

Clifton W. Sherman, known in connection with car wheel patents, began suit in Pittsburgh within the past week against the Pennsylvania Malleable Iron Company, and the Central Car Wheel Company, now controlled by the Pressed Steel Car interests, asking \$42,500, on a contract on which he claimed the old Central Car Wheel Company defaulted. Sherman invented a process much like that now in use at the Westinghouse plants, for the continuous pouring of metal castings. He says the officials of the Malleable and Car Wheel companies induced him to assign the patents to them in return for \$42,000 of stock in the two companies, and that he never received the stock. It is understood the companies have always claimed that Sherman's invention cost them huge sums in experiments before it became practicable.

U. S. STEEL AFTER COKE.

A story comes out of Uniontown, Pa., to the effect that Francis Rocks, the Fayette county operator, who has refused to go into the proposed independent coke merger, has been offered a price considerably over \$1,000,000 by the United States Steel Corporation, for the coal he holds and his 472 coke ovens. Mr. Rocks is said to control 600 acres of coking coal. Since the beginning of the negotiations for the formation of the contemplated independent merger, the Frick interests are understood to have been quietly inquiring as to prices for available undeveloped acreage.

CRANES FOR ALIQUIPPA.

Announcement has just been made of the letting by the Jones & Laughlin Steel Company, of contracts for new cranes for the Aliquippa plant now building. To the Alliance (O.), Machine Company was let the contract for four ladle cranes for the open hearth plant, two of 150-ton capacity and two of 50-ton capacity. To the Morgan Engineering Company, Alliance, was let the contract for five cranes for the open hearth blooming mills.

Work on the new open hearth furnaces at the Aliquippa plant is well under way.

BAR MILL RESUMES.

Operations were resumed August 9, on the bar mill at the Zug Iron & Steel Company's plant, Pittsburgh, putting the entire plant in operation. The puddling and sheet departments had been working, but other departments had been closed down temporarily.

LEGAL ISSUES RAISED IN TIN PLATE STRIKE.

The American Sheet & Tin Plate Company raised a new legal issue August 12 in its labor battle with the Amalgamated Association of Iron, Steel and Tin Workers, when separate civil actions were commenced in the United States court in Pittsburgh against 56 of the former employes of the company of New Castle. They are charged with conspiring to prevent the company from operating its mills at New Castle and causing a loss in profits. The action, for \$200,000 damages, is against them as individuals. The serving of the summons in the action caused a surprise to the striking workers, who were not anticipating any such move.

The bill of particulars alleges that the company has 700 men working in its plants in New Castle. It recites that the property of the company is valued at \$10,000,000 and gives employment to about 3,000 men. The persistent action of the strikers in preventing men from working, it says is resulting in losses to the company and preventing the use of its large investments in the town. President P. J. McArdle, of the Amalgamated Association, is made a party to the suit. The Amalgamated association is not chartered and has no legal standing in court.

The Amalgamated Association has extended the battleground in the present struggle against the "open shop" to many points that have been considered in former years as non-union. Several meetings have been held at Apollo, to which the non-union workmen of the Vandergrift plant were invited, and notwithstanding their lack of success at securing pledges of support, the union leaders announce further meetings. Several attempts have been made to organize the hot mill men at the Chester, W. Va., plant, but nothing has come of it as yet. Meetings also have been held at Canal Dover and New Philadelphia, O., where the company has non-union plants. Attempts made to unionize the plant at Morgantown, W. Va., have likewise been unsuccessful.

A serious blow was dealt the striking workmen at New Castle during the week, when the State constabulary on duty at the two plants of the company there issued orders that no further picketing by the strikers would be tolerated about the mill. The strikers presented their side of the case to the constabulary officers, without avail.

Additional men were taken into the plants at Sharon and New Castle during the week, and on August 11 company reports showed a total of 135 tin plate mills and 140 sheet mills working, as

compared with 124 tin plate and 138 sheet the week before.

At Youngstown, where the Youngstown Sheet & Tube Company also put in effect the open shop order on July 1, the men on strike have forwarded to Congressman James Kennedy, who represents that district at Washington, a petition that he request Secretary Nagel, of the Department of Commerce and Labor, to intervene in an effort to effect a settlement. Commissioner of Labor Neill, at Washington, is quoted as saying that he does not see any possibility of bringing the parties to the dispute together at present. He is of the opinion that neither side is in the state of mind which would permit an arbitration of the differences. The sheet and tube company is operating its tube department at capacity, while it is claimed four of the six mills in the sheet department are manned.

The hearing on the application of the American Sheet & Tin Plate Company for a permanent injunction against the strikers will come up before United States Judge Dayton, at the September term of the Federal Court, at Wheeling.

BUILD CEMENT PLANT.

The Tidewater Portland Cement Company, which was incorporated in June, with John K. Tener, of Charleroi, Pa., president; Joseph T. Fanning, 115 Broadway, N. Y., vice president, and Richard K. Meade, Nazareth, Pa., consulting engineer, on a capitalization of \$4,000,000 and a bond issue of \$1,750,000, has awarded a contract to the Fuller Engineering Company, Allentown, Pa., for the erection of a plant at Union Bridge, Md.

The Fuller company is preparing plans and specifications for a plant with a capacity of 1,000,000 barrels annually. The company proposes to manufacture 800,000 barrels of ordinary colored cement and 200,000 barrels of white cement as an initial annual production.

APPLYING FOR CHARTER.

Application will be made August 31, by the McKenney Iron & Steel Company, Pittsburgh, for a Pennsylvania charter to conduct a business of buying and selling iron, steel and scrap metals. The applicants are C. M. McKenney, G. W. McKenney and Charles A. Lock.

NEW ALUMINUM COMPANY.

The United States Aluminum Company, of Connellsville, was chartered in Pennsylvania August 12, with a capital stock of \$100,000; incorporators, H. A. Danne, J. D. Madigan, Wash Herd, D. D. Fretts and J. A. Dewitt, all of Connellsville.

ANNEALING BOX CONTRACT.

The National Manufacturing Company, Northside, Pittsburgh, has been awarded the contract for installing the entire annealing equipment for the McKeesport Tin Plate Company, McKeesport, Pa. The contract provides for supplying all boxes and bottoms and to make all repairs to the same until December 31, 1910. The company manufactures a welded annealing box which is reinforced with the Johnson patent protecting band. The box had been carefully tested by the McKeesport Tin Plate Company in competition with cast steel boxes and other welded boxes.

NEW RIVER WORK.

The Independent Bridge Company, Pittsburgh, has been awarded a contract for furnishing and erecting two 95-foot bear traps in Dam No. 8, Ohio river, at Wellsville, O. The Hollenback Contract Company has the general contract for the construction of the dam.

The Independent Bridge Company also has a contract for supplying and erecting a number of gates to be placed in the Tennessee river in Alabama. The gates are of heavy structural steel construction, each section being 45x45 feet.

OLD LANDMARK GONE.

The National Tube Company, of McKeesport, on August 10, began razing a brick building in Walnut street, that was one of the first to be erected by the concern almost 40 years ago. It will be replaced by a modern building and new machinery, the last of the new buildings planned by the company when an appropriation of \$10,000,000 for mills in McKeesport was made, and later increased to \$15,000,000.

RECORD CONCRETE SPAN.

The Pittsburgh Department of Public Works has prepared plans for a bridge over Beechwood boulevard. The structure will be 630 feet long, with a roadway of 50 feet and 10-foot sidewalks. The main span will be 300 feet and will stand 115 feet above the boulevard. This will be the longest reinforced concrete span in the world.

ROSEDALE FOUNDRY BUSY.

The Rosedale Foundry & Machine Company, is operating its plant, Northside, Pittsburgh, at capacity and has orders which will keep the works in operation for several months. The company manufactures light and heavy gray iron castings and Playford improved chain grate stokers.

Review of Industrial News From All Sections of the Country

ENLARGES ROLL CAPACITY.

The directors of The Youngstown Foundry & Machine Company, on August 16, elected the following officers: W. J. Wallis, president and general manager; F. A. Williams, vice president and manager of sales; B. G. Parker, secretary and treasurer.

The directors decided on some important changes. The roll business of this company has increased so rapidly during the past few years, that it has become necessary to make improvements to take care of the business. The steel foundry, located on East Boardman street, Youngstown, but which has not been operated for some time, will be completely overhauled, and made into a plant for the exclusive manufacture of sand and chilled rolls.

The main building, 90x190 feet, is already equipped with three electric traveling cranes. The company will install one 25- and one 15-ton air furnace, a 25-ton cupola, and a number of roll lathes and other machinery for the manufacture of rolls for sheet and tin mills and other purposes.

By making all the rolls at the East Boardman street plant, it will give additional capacity at the Reserve street plant, which will be devoted to the manufacture of castings for rolling mills and blast furnaces, as well as rolling mill machinery.

100-MILE WATER DITCH.

Advices from Spokane, Wash., say that ranchers owning 550,000 acres of land in the Crab Creek district in Grant county, Wash., southwest of Spokane, are backing a project to pipe water from the Columbia River near Marcus, Stevens county, Wash., to a point more than 100 miles south, at a cost of \$5,000,000, thus providing one of the most extensive gravity systems for irrigating in the world. The reclaimed area will provide homes for from 250,000 to 300,000 people when it is cut up into five, 10 and 20-acre tracts.

BOOSTING GRAFTON, W. VA.

The Grafton, W. Va., Board of Trade has begun a campaign to make the town a pottery center, and is advertising 5-cent gas for manufacturing purposes. The Board claims to have analyzed a local deposit of clays for colored glazed pottery which will take the place of a combination of four other clays. The Grafton clay can be laid down at the factory there for \$1.25 per ton, as against a cost of \$5 to \$8 a ton for the other

clays. W. R. Williams, secretary of the Grafton Board, writes the Industrial World that Grafton citizens are capitalizing a pottery company at \$50,000 to utilize the deposit, and expect to erect a 2-kiln plant. Citizens of the town have free sites for industrial enterprises.

TO RUSH NEW DAMS.

During the week just ended several delegates of Ohio valley representatives have called on the Secretary of War, at Washington, to urge that work be begun without delay upon the construction of Lock 29, between Catlettsburg and Ashland, Ky., on the Ohio River. The river interests have been complaining that this improvement has been unnecessarily delayed. Senator Bradley and Representatives Langley and Bennett, of Kentucky; Senators Burton and Dick, and Representative Johnson, of Ohio, and Representative Hughes, of West Virginia, have joined the agitation.

WHEELING FILTER PLANT.

The Wheeling (W. Va.), Board of Control is taking informal estimates of the cost of the installation of his filtration plant, known as the accumulator system of gravity and filtration. Three propositions and sealed proposals are now before the board, including the Smith strainer system, the well system and a plan by Frank Ault, a Wheeling mechanical engineer.

The board will not definitely decide in the matter until after the government decides on the location of dam No. 12, which will be built in the river at a point near Sisters islands.

METAL WORKERS MEET.

The largest and most important session of the National Association of Master Sheet Metal Workers ever held convened at the Galt House, Louisville, Ky., on August 12, with more than 500 of the craft in attendance. The protection of retail sheet metal dealers against indiscriminate operations of certain jobbers, who have recently entered the retail field, was discussed.

FOR SEWAGE DISPOSAL.

For the first time in the history of that section, representatives of cities along the Mahoning River met with the Ohio State Board of Health, August 5, to discuss plans for the purification of the stream. As a result of the conference several disposal plants will be built.

NEW POWER CONTRACTS.

A 2,500-kilowatt-ampere Westinghouse alternator driven by a 2,000-kilowatt Westinghouse steam turbine, has been ordered for furnishing light and power service to the Erwin Cotton Mills at West Durham, N. C. The steam element operates at 175 pounds pressure and exhausts into a vacuum of 27 inches. The power distribution will be made with three-phase, 60-cycle current at 600 volts. This property is the largest among the great cotton-mill interests of the Dukes, of the American Tobacco Company.

The contract for the construction of a hydro-electric development across Paulin's Kill, Columbia, New Jersey, for the Warren County Power Company, Keikleham & Dinsmore, engineers, has been awarded to Frank B. Gilbreth, No. 60 Broadway, New York City. This contract includes the construction of a Ransom hollow dam 30 feet high and 350 feet long, as designed by Ransom & Hoadley, of Providence, R. I., a reinforced concrete power house and a tail-race, etc.

FOR ALBERTA MINES.

The C. O. Bartlett & Snow Company, of Cleveland, O., has closed a contract through F. C. Greene, mining engineer, for complete coal-mine equipments for the McGillveary Coal & Coke Company, at Coleman, Alberta, and the West Canadian collieries at Bellevue, Alberta. The contract includes a steel tippie with all the necessary machinery, including transfer dump for each plant, as well as a complete power-plant equipment and haulage system. The plants will be entirely electrically operated and are to be in operation by November 1 of this year.

CHICAGO CONCRETE CONTRACT.

The contract for building 1,000 feet of reinforced concrete docks for the Deering Works of the International Harvester Company, Chicago, has been awarded to the Raymond Concrete Pile Company, of New York and Chicago. W. D. Price, engineer. The docks will be located along the north branch of the Chicago River.

The Hitchman Mining Company, at McMechen, W. Va., which recently absorbed the Glendale mine, has planned large improvements on the Glendale mine. With the view of making river shipments the company intend erecting a steel tippie from the mine to the river.

CONCRETE FENCE POSTS.

Application has been made for incorporation papers for the Youngstown, (O.), Reinforced Concrete Post & Block Company. The company will have a capital of \$10,000 and will manufacture concrete fence posts in Youngstown. The incorporators are Lewis Stocker, Charles Welty, Charles Fulkerson, J. H. C. Lyons and O. E. Diser.

The fence post consists of a concrete post moulded around four wires, one in each corner, or an irregular piece of iron in the middle. Fence wires are nailed to dove-tailed piece of wood set in the concrete.

INSTALLING MOLDING MACHINES.

The Wheeling Enamelled Iron Company, Wheeling, W. Va., is enlarging its plant at Elm Grove, W. Va., and making a number of improvements which will materially increase the capacity of the plant. The company will install molding machines and other modern appliances.

BIG PLANT FOR MEXICO.

Press reports from Mexico City say a large steel plant will be established in that city within the coming year by French and American capital. The initial outlay, it is asserted, will be \$50,000,000. Victor Bolanger, of Paris, is the head of the concern. It is understood that a large part of the capital will come from Paris and Boston. Coal and iron mines in Mexico will be acquired later by the company. The steel will be manufactured by a new and secret process.

REVIEW OF TRADE CATALOGUES

The National Metal Molding Company, Pittsburgh, has issued a catalog describing "Sherarduct," a new rust proof non-corrosive electrical conduit. This conduit is made from standard mild steel conduit pipe, manufactured from skelp of a nature to produce a non-brittle, easy bending tube. The Sherardizing treatment consists of placing tubes in a drum or retort which is then filled with powdered zinc dust and gradually heated to a temperature of 600 degrees, Fahrenheit. The gradual heating and cooling anneals the tubing and amalgamates the zinc with the inner and outer surfaces so that it is impossible to separate it either chemically or mechanically without removing the original surface.

* * *

The Year Book of the Michigan College of Mines, Houghton, Mich., contains a brief history of the institution since its establishment in 1884, and an outline of the work accomplished by the

faculty and students during that period. The college was established for the concentration of effort on training men for the field of mining. The location of the college is in a mining district and the students live in a mining atmosphere. The curriculum includes mathematics, chemistry, metallurgy, mechanics, electrical mining, mining and civil engineering, mineralogy and geology. The officers are Fred Walter McNair, president, Frances Hanna Scott, secretary.

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S. H. Stupakoff, M. E., Pittsburgh, has issued advance sheets of a catalog which is in the printers' hands, describing his recording hydrostatic draft and pressure gauge and hydrostatic velocity gauge, designed for the saving of fuel, prevention of smoke and recording results obtained in firing steam boilers. The recording and pressure gauge is supplied with an automatic record which indicates the gas pressure above the zero line, and the amount of draft of the flue below. The velocity gauge is similar in construction and is designed to measure the difference of pressure between the beginning and ending of the heating process.

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Bulletin No. 63, issued by the Universal Portland Cement Company, Chicago and Pittsburgh, shows a variety of application of concrete in structural work. A number of illustrations are presented of manufacturing and public buildings in various sections of the country, of which Universal Portland cement is an important factor. The bulletin states that the production of the company for the month of June was 558,000 barrels, of which 433,000 barrels were manufactured at the Chicago plant and 125,000 barrels at the Pittsburgh plant.

* * *

The Obermayer bulletin No. 4, of foundry information, issued by the S. Obermayer Company, Cincinnati and Pittsburgh, contains descriptions of a number of labor saving appliances for foundry use manufactured by the company. Among the appliances illustrated are the use of a segment to form the rim of a fly wheel mold, the Obermayer, Todd rumbler, the Cadet core oven, portable sand sifter, perforated tin chaplets, adjustable clamps for flasks and an article on "Standardizing Foundry Facings," by H. F. Frohman.

* * *

The D. M. Nichols Iron Works, New York, has issued an illustrated catalog describing the Danic sand blast machine for use in foundries, brazing establishments, file-sharpening shops and other establishments where rust, scale and paint are removed from metal and other material. Simplicity, durability, uniform action and efficiency are claims made for the machine.

Friction clutch pulleys, high collar oil bearings, ball and socket adjustable drop hangers and other power transmission appliances are illustrated and described in a bulletin issued by the Hill Clutch Company, Cleveland, Ohio. The company manufactures a line of shafting, pulleys, sheaves, gears and pinions.

* * *

Catalog No. 32, issued by the DuBois Iron Works, DuBois, Pa., contains a number of illustrations of steam, electric, gasoline engine and air driven types of power pumps manufactured by the company. DuBois pumps are entirely automatic in operation, and are built for all purposes.

* * *

The W. S. Rockwell Company, New York, has issued a pamphlet describing the Rockwell muffler furnace for assaying and refining metals. The furnace is designed for the use of oil or gas fuel and is in use in the assay offices and mints of the United States and Canada.

* * *

A bulletin issued by the Under-Feed Stoker Company, Chicago, Ill., describes the Jones stoker and presents a number of advantages of the under-feed system. Illustrations of a number of installations and a list of purchasers, are given.

OBITUARY.

JOHN J. BONNET.

John J. Bonnet, president of the Bonnet-Nance Stove Company, Chicago Heights, Ill., died July 29 at the age of 79 years. Mr. Bonnet's health had been impaired for several months. He was born in Wittenberg, Germany, his family coming to America when he was but a child and settling in Ohio. For a number of years Mr. Bonnet lived at Zanesville, where he began to learn the molder's trade. In 1856 he went to Quincy, Ill., where he followed his trade as a molder, and in 1863 embarked in the foundry business as a member of the firm of White, Bonnet & Company. The business was continued for three years, when the firm name was changed to Bonnet, Duffy & Company. In 1897 fire destroyed the Quincy foundry and in the following year operations were resumed at Chicago Heights.

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JOHN G. CODER.

One of the most prominent contracting engineers in Pennsylvania, John G. Coder, died at his home near Mechanicsburg, Pa., August 7, in his sixty-seventh year. He handled much government work on the Mississippi during the eighties. He was the builder of the municipal filtration plant at Harrisburg, Pa. He built the original steel plant at Sparrows' Point for the Sparrows' Point Steel Company, now owned by the Penn-

sylvania Steel Company. He also built the Pennsylvania State building at the Columbian exposition at Chicago in 1893 and erected the Pennsylvania exhibit, and built the Iowa and Idaho State buildings at the same exposition. One of the unique exhibits at the Chicago exposition—the workingman's model house—was the design of Mr. Coder. He planned and built it and it attracted wide attention from the hundreds of thousands of visitors. Plans for it were widely sold. After forming a partnership with William S. Miller in 1902, Mr. Coder gradually dropped a considerable portion of the responsibility, his younger associate assuming a correspondingly greater share of the work. Of late years the firm has filled several State building contracts. Mr. Coder was a Civil war veteran.

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JOSEPH DORSEY DUBOIS.

Joseph Dorsey DuBois, one of the founders of the Wheeling (W. Va.) Steel & Iron Company, and prominent in the nail trade since the days of the Civil war, died at his home in Wheeling August 9, aged 82 years. Mr. DuBois was born in Jefferson county, O., April 13, 1827, and studied law, but early became identified with manufacturing enterprises. As early as 1860 he built the steamboat "Prince of Wales," which for years plied in the St. Louis-New Orleans trade.

On June 30, 1864, Mr. DuBois became secretary and manager of the Belmont Nail Company in which position he continued till the consolidation of the Belmont Nail Company, Benwood Iron Works Company, the Wheeling Iron & Nail Company and the Wheeling Steel Works as the Wheeling Steel & Iron Company, in June of 1892. Mr. DuBois was chosen secretary and remained in that position till March 16, 1899, when he retired. He was also actively interested in traction lines, having been prominent in the management of the old horse car lines in Wheeling. He was president of the Wheeling & Elan Grove Railroad until 1892, when he resigned.

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COL. ALBERT A. POPE.

Col. Albert A. Pope, the pioneer bicycle manufacturer of the United States, died at his summer home in Cohasset, Mass., August 10. Col. Pope had been in ill-health for months, due to the break-down of his nervous system, which followed the financial embarrassment of his bicycle company, which had its headquarters in Hartford, Conn.

Albert Augustus Pope was born in Boston, May 20, 1843. He started his business career as a clerk in a local shoe findings store at \$4 a week. In 1876 the first imported bicycles began to make

their appearance in this country, and Col. Pope decided to start manufacturing wheels. The venture proved a success from the start. A craze for bicycling that even the high price of the early machines could not stem, swept over the country and in the first few years of his business Col. Pope amassed a fortune.

The sudden drop in the bicycle boom a few years ago, however, caused him financial embarrassment.

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R. SPAIN ANDERSON.

R. Spain Anderson, a former resident of Crawford county, Mo., and well known for his connection with the iron mining industry of that section, died August 7, at his home in St. Louis. He was 66 years old.

For many years Mr. Anderson was in business with his father, Robert Anderson, in the Scotia Iron Works in Crawford county. The family was wealthy. He served for several years as secretary of the Democratic Congressional Committee of the old Eighth Missouri District and was otherwise active in politics. In later years he held government position in Washington, D. C., and was an assistant paymaster in the United States Navy for a time.

* * *

ANDREW SUMNER BRAZNELL.

Andrew Sumner Braznell, aged 53, for many years a prominent figure in the coal and gas industry in Western Pennsylvania, died August 10, in the Jefferson Hospital in Philadelphia, following an operation. Mr. Braznell was born in Braddock and had lived there all his life. Early in life he became associated with his father, Benjamin Braznell, in the coal and gas business under the name of the Braznell Coal & Gas Company. Later he was identified with the Stockdale and Dunkirk coal companies, from which enterprises he and his father retired several years ago. More recently he was interested in coal and gas properties in the South.

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THOMAS EMMET ADDIS.

Colonel Thomas Emmet Addis, general agent of the Winchester Repeating Arms Company for 39 years, died August 9 at New Haven, aged 69 years. He was taken ill while traveling in Yucatan several months ago, and had been confined to his hotel apartments since then. His last long trip was taken two years ago, when he traversed the entire length of the Trans-Siberian Railway.

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GEORGE T. HEADRICK.

George T. Headrick, for the past 18 years a traveling electrical engineer for the Westinghouse Electric & Machine Company, died August 9 after a short

illness. He was born in Conemaugh, Cambria county, Pa., 49 years ago, and came to Pittsburgh in early life. His widow and seven brothers survive him.

CHARLES C. SCHREIBER.

Charles C. Schreiber, vice president and general manager of the L. Schreiber & Sons Company, foundrymen, of Cincinnati, died at his home in that city, August 8. The deceased has been in ill health for the past six years. He was the eldest son of Leonard Schreiber, founder and president of the L. Schreiber & Sons Company, who still survives him.

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BERNARD F. RAFFERTY.

Bernard F. Rafferty, one of the best known coal operators of the Pittsburgh district up to two years ago, died at his home in Pittsburgh August 11, aged 51. His interests were extensive, and he also was a strong factor in the widening of the oil industry in later years.

PERSONALS.

J. W. Marshall, for a number of years connected with the Westinghouse Air-brake works, has been chosen superintendent of shops in the engineering school of the University of Pittsburgh. Mr. Marshall is a graduate of Sibley college, the engineering school of Cornell University, in the mechanical engineering department. Mr. Marshall is at work on plans for new shops in the university's engineering building on Bayard street, which will provide for work in the foundry, forging, machine and pattern shops.

v

J. A. Gearhart has severed his connection with the Pennsylvania Railroad as material inspector in charge of the Pittsburgh district, to become a part of the organization of Gulick-Henderson Company, as manager of the inspection department. Mr. Gearhart has been in the employ of the Pennsylvania Railroad Company ever since he left school, and previous to his services in charge of the Pittsburgh inspection department, he was in charge of the company's inspection department, in Philadelphia.

v

George C. Fogwell has been appointed district sales agent in charge of the Philadelphia office of the Jones & Laughlin Steel Company, succeeding the late F. M. Campbell. Mr. Fogwell had been assistant in this office since its establishment in 1903; prior to that time he was for three and one-half years assistant purchasing agent of the New York Shipbuilding Company.

v

Herman D. Lapp, of Sopron, Hungary, is traveling in this country, making a study of American foundry practice. Mr

Lapp is connected with the Eisenwarenfabriks-Actiengesellschaft, of Sopron and Graz. His company is building a new foundry in Sopron, at an expenditure of \$300,000, which, if built in America, would mean an outlay of \$1,000,000.

Paul H. Smith has been appointed superintendent of the Pittsburgh & Butler Railway, to succeed W. M. Kessler, resigned. Mr. Smith was formerly with the Westinghouse Electric & Manufacturing Company as district engineer in charge of the erecting department at the St. Louis office of that company.

William H. Lindsey, who has been assistant to the president of the Napier Iron Works, Nashville, Tenn., has just been elected vice president of the company. Mr. Lindsey has been in the employ successively of the old Southern Iron Works, the Central Iron Company, and the Buffalo Iron Company.

Federal Judge R. W. Tayler, of Cleveland, who for several terms represented William McKinley's old congressional district in Ohio at Washington, and who has been prominently connected with Eastern Ohio industries, is the latest Ohioan to be mentioned as a Republican Gubernatorial possibility.

Mayor W. A. Magee, of Pittsburgh, accompanied by several members of his cabinet, spent several days in Chicago, during the past week, inspecting the sewage disposal system there. Pittsburgh will be in the market within a year for a sewage disposal plant.

A. W. Archer, formerly employed by the McAdoo interests, New York, in connection with the construction of the Hudson river tunnels and terminals, has become associated with the Carnegie Steel Company, in the selling of sheet steel piling.

The Bristol Company, Waterbury, Conn., has established a branch office in Pittsburgh, in the Frick building annex. The company is making a specialty of studying the application of Bristol's recording instruments in many different industries.

M. A. Richards, superintendent of the Kinney mine on the Mesaba range, owned by the Republic Iron & Steel Company, has resigned to take a position with the Higgins estate which owns ore lands in Michigan and Minnesota.

J. Kent Smith, who has attained a wide reputation through his experiments and exploitation of vanadium, has left Pittsburgh to take up his residence in England, where he will continue this line of work in an engineering capacity.

John Daker, Jr., who has represented the Domhoff & Joyce Company, Cincinnati, in the Detroit district for some time, will represent Hickman, Williams & Company, pig iron merchants, Chicago, in the same territory.

Pennsylvania hosiery manufacturers will on October 26, tender a banquet to Senator Bois Penrose, of Philadelphia, in that city, in recognition of his services in securing a higher duty on hosiery in the new tariff law.

About \$300,000 life insurance, carried by the late Robert Pitcairn, of the Pennsylvania Railroad, has been paid over to his widow.

Thomas F. Meek, vice president and sales manager of the Detroit Steel Casting Company, Detroit, Mich., has resigned.

CANADIAN PIG IRON.

According to the Canadian midsummer pig iron statistics, prepared by the American Iron & Steel Association bulletin, the total production of all kinds of pig iron in the Dominion in the first half of 1909 amounted to 349,641 gross tons, as compared with 256,598 tons in the last half of 1908 and 307,074 tons in the first half. This is an increase of 93,043 tons as compared with the last half of 1908 and of 42,567 tons as compared with the first half. The production in the first half of 1909 was the greatest in any half year in the history of the Dominion, exceeding by 38,595 tons that of the last half of 1907, the next highest half year. It was also greater than the production of any whole year period to 1905. The following table gives the half-yearly production since 1907:

Gross tons	1907	1908	1909
First half.....	270,100	307,074	349,641
Second half...	311,046	256,598	.....
Total.....	581,146	563,672	.....

The production of Bessemer pig iron in the first half of 1909 amounted to 99,639 tons, against 52,586 tons in the last half of 1908 and 60,225 tons in the first half of that year. This is an increase of 47,053 tons as compared with the last half and of 39,414 tons as compared with the first half of 1908. The Bessemer production in the first half of 1909 exceeded that of any other half year.

The production of basic pig iron in the first half of 1909 amounted to 165,112 tons, against 140,201 tons in the last half of 1908 and 195,209 tons in the first half. This is an increase of 24,911 tons over the last half of 1908 but a decrease of 30,097 tons as compared with the first half.

The production of bituminous pig iron in the first half of 1909, including a small quantity of ferro-silicon made with electricity, amounted to 347,482 tons, against 255,407 tons in the last half of 1908 and 302,276 tons in the first half of that year. In the first half of 1909 the production of charcoal pig iron amounted to 2,159 tons, against 1,191 tons in the last half of 1908 and 4,798 tons in the first half.

On June 30, 1909, Canada had 16 completed blast furnaces, of which 10 were in blast and six were idle. Of this total 12 were equipped to use coke and four to use charcoal. In addition one coke furnace was being built. Two coke furnaces were partly erected on the same date, the construction of which was indefinitely suspended a few years ago. During the first half of 1909 the total number of furnaces in Canada actually in blast for the whole or a part of the period was 12. The number idle during the whole period was four.

According to the Bulletin, the Dominion Iron & Steel Company had three of its four furnaces at Sydney, Nova Scotia, running on June 30. The company is to start work on a fifth furnace in the last half of 1909. The Nova Scotia Steel & Coal Company, Limited, operated its furnaces at Sydney Mines continuously during the first six months of 1909. It has dismantled its furnace at Ferrona.

The Algoma Steel Company, Limited, operated continuously in the first half of 1909 its two furnaces at Sault Ste. Marie. Work is to be resumed in August on the company's No. 3 furnace, which was partly erected in 1901. The furnace will be 86x21 feet and will have an annual capacity of 140,000 tons of Bessemer and basic pig iron. The Hamilton Steel & Iron Company, Limited, of Hamilton, Ont., operated both of its furnaces during the first half of 1909, although one furnace was out for relining on June 30. It was to resume on July 21. A Gayley dry-air plant is being added.

The Midland No. 1 furnace of the Canada Iron Corporation, at Midland, Ont., ran continuously during the first six months of 1909. The corporation has started work on a new furnace at Midland, which it hopes to have ready for operation in January, 1910. It will be equipped with one Roberts and three Cowper-Whitwell stoves, and will have an annual capacity of 90,000 tons of foundry, malleable and Bessemer iron. Local and Lake Superior ores will be used.

The Cambria Forge Company, is improving its plant at Johnstown, Pa., by the erection of 12 new heating furnaces. Additional machinery and appliances will also be installed.

Tariff on Iron and Steel Products Compared With Dingley Bill

FOLLOWING is a comparison of the rates in the new tariff law, in operation August 6, with those of the old Dingley act, as they affect iron and steel products. The letter "O" indicates the rates under the old law; the letter "N" the newly established rates:

Metals and Manufactures of.

Iron ore, including manganiferous iron ore, and dross or residuum from burnt pyrites, tons. O—40c ton. N—15c ton.

Provided, that no deduction shall be made from weight of ore on account of moisture chemically or physically combined therewith.

Basic slag, ground or unground, tons. O—\$1 ton. N—Free of duty.

Iron in pigs, kentledge, spiegeleisen, and ferro-manganese, tons. O—\$4 ton. N—\$2.50 ton.

Scrap iron and steel, waste or refuse, fit only to be remanufactured:

Wrought and cast, tons. O—\$4 ton. N—\$1 ton.

Bar iron—Rolled or hammered, comprising—

Flats not less than 1 inch wide nor less than $\frac{3}{8}$ of 1 inch thick, pounds. O—6-10c lb. N—3-10c lb.

Round iron not less than 7-16 of 1 inch in diameter, pounds. O—6-10c lb. N—3-10c lb.

Square iron, pounds. O—6-10c lb. N—3-10c lb.

Muck bars. O—None. N—3-10c lb.

Bars or shapes of rolled or hammered iron, n. s. p. f., and round iron, in coils or rods, less than 7-16 of 1 inch in diameter, lbs. O—8-10c lb. N—6-10c lb.

Slabs, blooms, loops or other forms less finished than iron in bars and more advanced than pig, except castings, lbs. O—5-10c lb. N—4-10c lb.

Bars, blooms, billets, slabs, or loops, in manufacture of which charcoal is used as fuel, tons. O—\$12 ton. N—\$8 ton.

Beams, girders, joists, angles, channels, car-truck channels, T columns and posts or parts or sections of columns and posts, deck and bulb beams and building forms and all other structural shapes not assembled, or manufactured, or advanced beyond hammering, rolling, or casting:

Valued 9-10c lb. or less. O—5-10c lb. N—3-10c lb.

Valued over 9-10c lb. O—5-10c lb. N—4-10c lb.

Boiler or other plate iron or steel (except crucible plate steel and saw plates), not thinner than No. 10 wire gauge, sheared or unsheared; skelp iron or steel sheared or rolled in grooves:

Valued 8-10c lb. or less. O—5-10c lb. N—3-10c lb.

Valued 8-10c lb. to 1c lb. O—None. N—4-10c lb.

Valued 1c to 2 cents lb. O—6-10c lb. N—5-10c lb.

Valued 2 cents to 3 cents lb. O—1c lb. N—6-10c lb.

Valued over 4 cents lb. O—25 per cent. N—20 per cent.

Cold rolled, smoothed only, not polished, valued 2 cents to 4 cents lb. O—12-10c lb. N—7-10c + 2-10c lb.

Note—O—Designates rates in old law. N—New law.

Anchors, or parts of, lbs. O—1 $\frac{1}{2}$ c lb. N—1c lb.

Forgings of iron or steel, or combined iron and steel, n. s. p. f. not machined, tooled, or otherwise advanced by process or operation subsequent to the forging process. O—35 per cent. N—30 per cent.

Anti-friction balls, ball-bearings, roller bearings, of iron or steel, or of combined iron and steel. O—45 per cent. N—45 per cent.

Hoop, band, or scroll iron or steel not otherwise provided for, valued at 3 cents per pound or less, 8 inches or less in width and less than $\frac{3}{8}$ -inch thick:

Not thinner than No. 10 wire gauge, lbs. O—5-10c lb. N—3-10c lb.

Thinner than No. 10 and not thinner than No. 20 wire, gauge lbs. O—6-10c lb. N—4-10c lb.

Thinner than No. 20 wire gauge, lbs. O—8-10c lb. N—6-10c lb.

Hoop or band iron, or hoop or band steel, flared, splayed, or punched, with or without buckles or fastenings, and barrel hoops of iron or steel:

Not thinner than No. 10 wire gauge, lbs. O—6-10c lb. N—4-10c lb.

Thinner than No. 10 wire gauge, lbs. O—6-10c lb. N—4-10c lb.

Thinner than No. 10 and not thinner than No. 20 wire gauge, lbs. O—7-10c lb. N—5-10c lb.

Bands and strips of steel over 12 feet long. O—None. N—35 per cent.

Hoop or band iron, or hoop or band steel, cut to length, or wholly or partly manufactured into hoops or ties, coated or not coated, with or without buckles or fastenings, lbs. O—5-10c lb. N—3-10c lb.

Bars or rails for railways:
Iron, tons. O—\$7.84 ton. N—\$3.92 ton.

Steel, tons. O—\$7.84 ton. N—3.92 ton.

Railway fish plates or splice bars, or iron or steel, lbs. O—4-10c lb. N—3-10c lb.

Sheets of iron or steel, common or black, and skelp iron or steel, valued at 3 cents per pound or less:

No. 10 to No. 20 wire gauge, lbs. O—7-10c lb. N—5-10c lb.

No. 20 to No. 25 wire gauge, lbs. O—8-10c lb. N—6-10c lb.

No. 25 to No. 32 wire gauge, lbs. O—11-10c lb. N—8-10c lb.

Thinner than No. 32 wire gauge, lbs. O—11-10c lb. N—9-10c lb.

Sheet iron or sheet steel, corrugated or crimped, lbs. O—12-10c lb. N—8-10c lb.

All valued at more than 3 cents per pound: O—None. N—30 per cent.

Sheet or plates of iron or steel (excepting what are commercially known as tin plates, terne plates and taggers tin) and all iron or steel sheets or plates galvanized or coated with zinc or spelter, or other metals, or any alloy:

No. 10 to No. 20 wire gauge, lbs. O—9-10c lb. N—7-10c lb.

No. 20 to No. 25 wire gauge, lbs. O—1c lb. N—8-10c lb.

No. 25 to No. 32 wire gauge, lbs. O—13-10c lb. N—1c lb.

Thinner than No. 32 wire gauge, lbs. O—14-10c lb. N—11-10c lb.

Sheet iron or sheet steel:

Corrugated or crimped, galvanized or coated with zinc, spelter, or other metals, or any alloy, lbs. O—13-10c lb. N—1c lb.

Sheets or plates of iron, steel or copper, nickel, or other metal with layers of other metal or metal imposed thereon by forging, hammering, rolling, or welding. O—None. N—40 per cent.

Sheet iron or sheet steel, polished, planished, or glanced, lbs. O—2c lb. N—1 $\frac{1}{2}$ c lb.

Sheets and plates pickled or cleaned by acid, or by any other material or process, or cold rolled, smoothed only, not polished:

No. 10 to No. 20 wire gauge, lbs. O—9-10c lb. N—7-10c lb.

No. 20 to No. 25 wire gauge, lbs. O—1c lb. N—8-10c lb.

No. 25 to No. 32 wire gauge, lbs. O—13-10c lb. N—1c lb.

Tin plates: Sheets or plates of iron or steel, or taggers iron, or steel coated with tin or lead, or with a mixture of which these metals are a component part, by the dipping or any other process, and commercially known as tin plates, terne plates and taggers tin. O—1 $\frac{1}{2}$ c lb. N—12-10c lb.

Steel ingots, cogged ingots, blooms and slabs; die blocks or blanks; billets and bars, tapered or beveled bars; mill shaftings; pressed sheared, or stamped shapes (not advanced by any process subsequent to process of stamping); hammer molds or swaged steel; gun-barrel molds not in bars; alloys used as substitutes for steel in manufacture of tools; descriptions and shapes of dry sand loam, or iron-molded steel castings; steel in all forms and shapes not specially provided for:

Valued $\frac{3}{4}$ cents per pound or less. O—None. N—7-40c lb.

Valued $\frac{3}{4}$ cent to 13-10 cents lb. O—None. N—3-10c lb.

Valued 13-10c to 18-10c lb. O—None. N—5-10c lb.

Valued 18-10c to 22-10c lb. O—7-10c lb. N—6-10c lb.

Valued 22-10c to 3c lb. O—9-10c lb. N—8-10c lb.

Valued 3c to 4c lb. O—12-10c lb. N—11-10c lb.

Valued 4c to 7c lb. O—13-10c lb. N—12-10c lb.

Valued 7c to 10c lb. O—2c lb. N—19-10c lb.

Valued 10c to 13c lb. O—24-10c lb. N—23-10c lb.

Valued 13c to 16c lb. O—28-10c lb. N—27-10c lb.

Valued 16c to 24c lb. O—47-10c lb. N—46-10c lb.

Valued 24c to 32c lb. O—None. N—6c lb.

Valued 32c to 40c lb. O—None. N—7c lb.

Valued above 40c lb. O—None. N—20 per cent.

Steel wool or steel shavings. O—None. N—40 per cent.

Grit, shot and sand, iron or steel, used only as abrasives. O—None. N—1c lb.

Wire rods: Rivet screws fence other iron or steel wire rods, whether round, oval, flat, square or other shape, nail rods in coils or otherwise, not smaller than No. 6 wire gauge:

Untempered or untreated—

Valued 4c or less, lbs. O—4-10c lb. N—3-10c lb.

Valued over 4c lb. O— $\frac{3}{4}$ c lb. N—6-10c lb.

Tempered or treated or partly manufactured, $\frac{1}{2}$ lb. additional to rate on untempered.

Round iron or steel wire, not smaller than No. 16 wire gauge, lbs. O— $1\frac{1}{4}$ c lb. N—1c lb.

No. 13 to No. 16 wire gauge. O— $1\frac{1}{2}$ c lb. N— $1\frac{1}{4}$ c lb.

Smaller than No. 16, lbs. O—2c lb. N— $1\frac{3}{4}$ c lb.

But not less than 35 per cent on any of foregoing. O—40 per cent. N—35 per cent.

Wire of iron or steel, or other metal, except gold or silver, covered with cotton, silk, or any other material, corset clasps, corset steels, dress steels, and all flat wires and steel in strips not thicker than No. 15 wire gauge and not exceeding five inches in width, and all wire. O—45 per cent. New 35 per cent.

Iron and steel wire coated by dipping or galvanizing, 2-10c lb in addition to rate on wire of which made.

Articles manufactured wholly or in chief value of any wire provided for in this paragraph pay maximum rate on any wire used in their manufacture and 1c lb. in addition.

No articles made or composed of wire to pay less than 40 per cent.

Telegraph, telephone and other wires and cables, metal and rubber, or of metal, rubber and other materials. O—None. N—40 per cent.

Barbed fence wire. O—None. N— $\frac{3}{4}$ c pound.

Wire heddles. O—None. N—25c M. and 40 per cent.

Steel ingots, cogged ingots, blooms and slabs, die blocks or blanks; billets, bars, tapered or beveled bars; mill shaftings; pressed, sheared, or stamped shapes; hammer molds or swaged steel; gun-barrel molds not in bars; alloy used as substitutes for steel in tools; all dry sand, loam, or iron molded steel castings; steel in all forms and shapes not specially provided for; cold rolled, cold drawn, cold hammered, or polished in any way, in addition to ordinary process, $\frac{3}{4}$ c lb in addition to rates on hot rolled.

Sheets and plates not specially provided for, cold hammered, blued, brightened, tempered, or polished to perfected surface finish, or polish better than grade of cold rolled, smoothed only, hereinbefore provided for, 4-10c lb in addition to rates on sheets or strips of common or block finish.

Steel circular saw plates, $\frac{1}{4}$ c in addition to steel plates. O—8-10c lb. N—None.

Anvils, lb. O— $1\frac{1}{4}$ c lb. N— $1\frac{3}{4}$ c lb.

Automobiles, and finished parts, not including tires. O—45 per cent. N—45 per cent.

Bicycles, motor cycles, finished parts, not including tires. O—None. N—45 per cent.

Axles or parts of, axle bars, axles, iron or steel, without reference to stage of manufacture, valued at not more than 6 cents, lbs. O—1c lb. N— $\frac{3}{4}$ c lb.

Hammers and sledges (blacksmiths'), track tools, wedges, crowbars, iron or steel, lbs. O— $1\frac{1}{2}$ c lb. N— $1\frac{3}{4}$ c lb.

Bolts, with or without threads or nuts, or bolt blanks, finished hinges or hinge blanks, iron or steel, lbs. O— $1\frac{1}{2}$ c lb. N— $1\frac{1}{4}$ c lb.

Card clothing not actually and permanently fitted to and attached to carding machines or to parts thereof at the time of importation:

Manufactured with round iron or untempered, round steel wire. O—20c square foot. N—20c square foot.

Do tempered with round steel wire. O—45c square foot. N—45c square foot.

Manufactured with plated wire, or other than round iron or steel wire or with felt face, wool face, or rubber face cloth, containing wool. O—20c square foot. N—55c square foot.

Cast-iron pipe, every description, lbs. O—4-10c lb. N— $\frac{1}{4}$ c lb.

Cast-iron vessels, stove plates, and irons, tailors' iron, hatters' irons, and castings of iron, not specially provided for. O—8-10c lb. N—8-10c lb.

Castings of iron or cast-iron plate, chiseled, drilled, machined, or otherwise advanced in condition by processes or operation subsequent to casting process but not made up into articles. 2-10c per pound additional.

Malleable-iron castings, not specially provided for, lbs. O—9-10c lb. N—7-10c lb.

Cast hollow ware, coated, glazed, or tinned, lbs.. O—2c lb. N— $1\frac{1}{2}$ c lb.

Chain, or chains, made of iron or steel: Not less than $\frac{3}{4}$ inches in diameter, lbs. O— $1\frac{1}{8}$ c lb. N— $\frac{7}{8}$ c lb.

Less than $\frac{3}{4}$ inch and not less than $\frac{3}{8}$ inch, lbs. O— $1\frac{3}{4}$ c lb. N— $1\frac{1}{8}$ c lb.

Less than $\frac{3}{8}$ inch and not less than 5-16 inch lbs. O— $1\frac{7}{8}$ c lb. N—1 6-8c lb.

Less than 5-16 inch, lbs. O—3c lb. N—3c lb.

Provided, that not no chain shall pay less than. O—45 per cent. N—45 per cent

Tubes, pipes, flues or stays, lap-welded, butt-welded, seamed, or pointed, not thinner than No. 16 wire gauge

Not less than $\frac{3}{8}$ inch in diameter. O—2c lb. N—1c lb.

$\frac{3}{8}$ inch to 1 inch. O—None N— $1\frac{1}{2}$ c lb.

Less than $\frac{1}{4}$ inch. O—None. N—2c lb.

Provided that no tubes, pipes, flues, or stays of charcoal iron shall pay less than O—None. N— $1\frac{1}{2}$ c lb.

Cylindrical or tubular tanks or vessels, for holding gas, liquids or other material, full or empty. O—None. N—30 per cent.

Flexible metal tubing or hose, not specially provided for, covered with wire or other material, or otherwise, including appliances or attachments affixed thereto. O—None. N—30 per cent.

Welded cylindrical furnaces, tubes, or flues made from plate metal, and corrugated, ribbed, or otherwise reinforced against collapsing pressure. O— $2\frac{1}{2}$ c lb. N—2c lb.

All other iron or steel tubes, finished, not specially provided for. O—35 per cent. N—30 per cent.

Nails and spikes, cut, of iron or steel, lbs. O—6-10c lb. N—4-10c lb.

Nails, horseshoe, hob, and all other wrought-iron or steel nails, not specially provided for, lbs. O— $2\frac{1}{4}$ c lb. N— $1\frac{1}{2}$ c lb.

Nails, wire made of wrought iron or steel—

Not less than 1 inch in length and not lighter than No. 16 wire gauge, lbs. O— $\frac{1}{2}$ c lb. N—4-10c lb.

Do less than 1 inch and lighter than No. 16 wire gauge. O— $\frac{1}{2}$ c lb. N— $\frac{3}{4}$ c lb.

Spikes of wrought iron or steel, lbs. O—1c lb. N— $\frac{3}{4}$ c lb.

Nuts and washers, wrought iron or steel, lbs. O—1c lb. N— $\frac{3}{4}$ c lb.

Horse, mule, or ox shoes, wrought iron or steel, lbs. O—1c lb. N— $\frac{3}{4}$ c lb.

Tacks, brads, or sprigs, cut—

Not exceeding 16 ounces to the 1,000. O— $1\frac{1}{4}$ c per M. N— $\frac{5}{8}$ c per M.

Exceeding 16 ounces to the 1,000 lbs. O— $1\frac{1}{2}$ c lb. N— $\frac{3}{4}$ c lb.

Tungsten ores of all kinds. O—None. N—10 per cent.

Brick, Tile and Cement.

Brick, fire weighing not more than 10 pounds each; not glazed, enameled, ornamented or decorated, tons. O—\$1.25 ton. N—\$1.25 ton.

Glazed, enameled, ornamented or decorated, tons. O—45 per cent. N—35 per cent.

Brick, fire, weighing more than 10 pounds each:

Not glazed, enameled, etc. O—None. N—30 per cent.

Glazed, enameled, etc. O—None. N—35 per cent.

Magnesite brick, cltrome brick and brick other than fire:

Not glazed, enameled, painted, vitrified, ornamented or decorated, M. O—25 per cent. N—25 per cent.

Glazed, enameled, painted vitrified, ornamented or decorated, M. O—45 per cent. N—35 per cent.

Tiles:

Plain unglazed, one color, exceeding 2 square inches in size, square foot. O—4c square foot. N—4c square foot.

Glazed, encaustic, ceramic, mosaic, vitrified, semi-vitrified, flint, spar, embossed enameled, ornamented, hand painted, gold decorated, and all other earthenware tiles except pill tiles.

Values not exceeding 40 cents square foot. O—8c square foot. N—8c sq. ft.

Valued exceeding 40 cents sq. ft. O—10c sq. ft. and 25 per cent. N—10c sq. ft. and 25 per cent.

Quarries or quarry tiles. O—None. N—45 per cent.

Mantles, friezes, all other articles, wholly or in chief value of tiles or tiling. O—None. N—60 per cent.

Cement:

Roman, Portland and other hydraulic, in barrels, sacks or other packages, including weight of barrel or package, lbs. O—8c 100 lbs. N—8c 100 lbs.

Do (in bulk). O—7c 100 lbs. N—7c 100 lbs.

Other cement. O—20 per cent. N—20 per cent.

Bituminous Coal.

Bituminous coal and shale, tons. O—67c ton. N—45c ton.

Slack or culm, such as will pass through a half-inch screen, tons. O—15c ton. N—15c ton.

Coke, tons. O—20 per cent. N—20 per cent.

Compositions used for fuel in which coal or coal dust is the component material of chief value, in briquettes or other form. O—None. N—20 per cent.

Emery.

Grains, and ground, pulverized, refined, or manufactured emery, lbs. O—1c lb. N—1c lb.

Wheels and files, and manufactures of which emery or corundum is component material of chief value. O—25 per cent. N—25 per cent.

Crude artificial abrasives. O—None. N—10 per cent.

REVIVAL AT NAVY YARDS.

Crews are being re-engaged at the Philadelphia navy yard. Several warships will be sent here to be repaired and overhauled, among them being the battleship Kearsarge, which has been out of commission. At Norfolk, \$500,000 is being spent on repairing and refitting the Kentucky.

Corporations to Which Charters Have Been Granted Recently

PENNSYLVANIA.

Nolan Coal Company. Capital stock \$15,000. Treasurer: Thomas G. Nolan, 829 Douglass street, Reading, Pa. Directors: Clifford H. Price, Charles J. Nolan; Thomas G. Nolan, all of Reading, Pa.

Walker Electric Company increased capital stock from \$50,000 to \$150,000.

Simplex Engineering Company increased capital stock from \$10,000 to \$20,000.

Philadelphia Electrical & Manufacturing Company increased capital stock from \$25,000 to \$50,000.

Sharon Steel Hoop Company increased capital stock from \$1,000,000 to \$2,000,000.

Industrial Supply & Equipment Company. Capital stock from \$10,000. Treasurer: E. Waterman Dwight, 1729 Walnut street, Philadelphia. Directors: E. Waterman Dwight, James McMullan, Geo. S. Munson, all of Philadelphia.

Rochester & Mars Street Railway Company. Capital stock \$100,000. President: J. H. Barrett, Mars, Pa. Directors: W. M. Boggs, Valencia, Pa.; D. R. Torrence, David Hunter, Jr., both of Pittsburgh, Pa.; J. G. Downie, Downieville, Pa.; J. H. Barrett, Mars, Pa.

Bartley-Kennedy Company. Capital stock \$25,000. Treasurer, C. Burchfield Kennedy, Penn avenue and Third street, Pittsburgh. Directors, F. C. Bartley, C. B. Kennedy, E. V. Stroup, all of Pittsburgh.

Clarion & East Brady Electric Railway Company. Capital stock \$300,000. President, G. E. Arnold, Clarion, Pa. Directors, G. E. Arnold, T. S. Arnold, Clarion, Pa.; R. M. Werner, Akron, O.; J. N. Langham, Indiana, Pa.; F. W. Witherell, Pittsburgh, Pa.

Catawissa Electric Company. Capital stock \$5,000. Treasurer, M. Milleisen, Bloomsburg, Pa. Directors, E. R. Sponsler, Harrisburg, Pa.; M. I. Low, Lime Ridge, Pa.; A. D. Duy, Bloomsburg, Pa.; C. M. Creveling, Almedia, Pa.; W. F. Lowry, Berwick, Pa. Gearhart Electric Company, Mifflin Township Electric Company, Shickshinny Electric Company, same as above.

Hartz Machinery Company. Capital stock \$25,000. Treasurer, A. M. Goettel, Philadelphia. Directors, M. N. Hartz, W. M. Nissley, A. M. Goettel, all of Philadelphia.

Slatington Light & Power Company. Capital stock \$5,000. Treasurer, C. M. Walter, Allentown, Pa. Directors, R. P. Stevens, A. H. S. Cantlin, C. M. Walter, all of Allentown, Pa.

NEW YORK.

Fire Alarm Engineering & Manufacturing Company, New York; engineering and manufacturing; capital, \$6,000. Incorporators, Robert L. McElroy, Alice N. Croaker and Albert L. Thurston, all of Whitestone, L. I.

Frontier & Western Railroad Company, Buffalo, N. Y.; steam railroad; capital, \$500,000. Incorporators, Arthur D. Bissell, John C. Conway and William B. Cutter, all of Buffalo, N. Y., and others.

Garden City Novelty Company, Chicago; manufacturing noodle machines; capital, \$2,500. August F. Jelaneck, No. 420 Ashland block, Chicago, Ill.

Harrison Engineering Company, New York; manufacturing machinery, particularly for heating and ventilation; capital, \$500,000. Incorporators, P. B. Gibson, No. 146 West Sixty-fourth street; H. F. Harris, No. 20 West Ninety-eighth street, both of New York; B. S. Harrison, No. 252 Lafayette avenue, Brooklyn.

W. A. Eckert Manufacturing Company, Buffalo; manufacturing metal specialties; capital, \$40,000. Incorporators, William A. Eckert, Edward L. Eckert and Florence G. Eckert, all of Buffalo.

Hall Car Company, New York; manufacturing engines, motors, cars, locomotives and vehicles of all kinds; capital, \$20,000. Incorporators, T. M. May, B. H. Howell and H. P. Hall, No. 2 Rector street, New York.

The Toritto Coal Company, Catskill, N. Y.; coal and ice; capital, \$25,000. Incorporators, R. A. Weill, 625 East Eighteenth street; Moritz Uuruh and Leopold Fuerther, No. 50 Church street, all of New York.

OHIO.

Samson Humane Spring Heel Company, Cleveland, steel and iron products; capital, \$25,000; Pierce D. Metzger, Geo. D. Sowden, P. C. Stoiler, T. N. Dillon and William Samson.

Elite Strainer Manufacturing Company, Cleveland, increase of capital stock from \$10,000 to \$25,000.

Wright Wrench Manufacturing Company, Canton; capital, \$150,000; manufacturing tools, implements, wrenches, etc.; James F. Wright, Harry C. Haight, Henry C. Milligan, Thomas F. Turner and M. C. Barbary.

King Vending Machine Company, Columbus; capital, \$10,000; vending machines; Otto W. Linter, Edgar H. Olimb, Blanche Olimb, William J. Meyer, R. C. Senter and Frank S. Gleichauf.

Zanesville Light & Fuel Company, Zanesville; capital, \$100,000; natural gas and electric light; W. Hunter Atha, Thomas C. Murphy, A. P. Roggee, William M. Shinnick and William J. Mason.

H. & H. Art Metal Manufacturing Company, Cleveland; capital, \$15,000; manufacturing ornamental metal and iron products; John Hand, Akos Hose-litz, Jacob Hammel, Herman Kollman and D. C. Pinney.

Jewel Carriage Company, Carthage; increase of capital stock from \$100,000 to \$250,000.

Standard Light & Power Company, Fostoria; capital, \$100,000; electric light plant; Samuel Cadwallader, Curtis Guernsey, Clarence W. Latshaw, D. E. Six and Dayton Newcomer.

B. & M. Machine Company, Akron; capital, \$10,000; manufacturing machinery, etc; S. H. Boyd, K. L. Meredith, O. T. Lane, Allen E. Kile and A. T. Meredith.

Collister-Wellman Company, Cleveland; capital, \$10,000; manufacturing tools, etc.; W. K. Wellman, W. C. Col-

lister, F. R. Marvin, B. S. Kennedy and John H. Smart.

Schild Specialty Company, Cleveland; metals and rubber specialties; John P. Schild, Martin W. Sanders, John F. Kimmel, M. M. Reiss and Fielder Sanders.

Dayton, Springfield & Xenia Southern Railway Company, Dayton; increase of capital stock from \$10,000 to \$500,000.

Electric Supply Company, Columbus; capital, \$50,000; manufacturing electric supplies; E. W. Swisher, L. M. Freguson, J. D. Price, C. F. Myers and Ferdinand Bauman.

Petersen Company, Akron; capital, \$35,000; manufacturing paper boxes, strawboard, etc.; Anton Petersen, Thos. L. Childs, Dagmar H. Petersen, Clarence Bennett and William Dutt.

Batavia Foundry Company, Batavia; capital, \$5,000; manufacturing heavy castings, etc.; Gustave Wilke, Dorothy Wilke, John S. Davis, Elizabeth W. Davis, Frank C. Marters and Katherine F. Marters.

Puritan Coal Company, Cambridge; increase of capital stock from \$75,000 to \$100,000.

Tobacco Brush & Stripper Company, Cincinnati; to build plant and manufacture new stripping machine; capital, \$200,000. Incorporators: Harry L. Linch, A. V. Fuhrman, Covington; Dr. Aaron Grodsky, Louis Grodsky, and Glendenning H. Groebeck.

Celina Manufacturing Company, Celina; windmills; Henry Lemartz, J. E. Hattery, J. S. Springer, H. D. Pierce, W. J. Machlman; capital, \$25,000.

South End Machine Company, Akron; A. A. Replogle, L. A. Cook, F. F. Seidel, F. A. Harvey, T. O. Evans; capital, \$10,000.

Buckeye Rolling Mill Company, Newark; Edward Thomas, L. L. Grimes, J. T. Sarratt, F. M. Work, E. E. Francey; capital, \$100,000.

Sardinia Mercantile Company, Sardinia; W. E. Hare, S. M. Needham, O. E. Bare, J. Slavosky, W. J. Marshall; capital, \$10,000.

Wellston Coal & Brick Company, Wellston; increase of capital from \$75,000 to \$250,000.

Union Handle & Manufacturing Company, Ashley; H. D. Dale, E. E. Dale, F. Rigby, C. W. Spring, H. H. Grubb; capital, \$15,000.

South Webster Clay Products Company, South Webster; W. E. Tripp, G. M. Appel, J. C. Bauer, A. F. Marting and F. B. Finney; capital, \$100,000.

Cleveland Collet & Machine Company, Cleveland; capital, \$10,000; manufacturing collets, tools, etc.; Charles F. Schultis, John F. Peace, Harry F. Payer, J. M. Shallenberger and F. C. Diltz.

Etna Pine Coal Company, Springfield; capital, \$10,000; mining coal, etc.; J. B. Von Schultz, Floyd A. Johnston, H. F. Miller, Mabelle C. Johnston and J. J. Welty.

United States Phonograph Company, Cleveland; capital, \$10,000; manufacturing motor supplies. Incorporators: F.

M. Chandler, V. H. Meyer, F. M. Fanning, F. F. Schwenner and M. C. Bixby.

Canton Brass & Machine Company, Canton; capital, \$50,000; manufacturing brass goods, etc. Incorporators: C. W. Keplinger, J. F. Dougherty, Spencer S. Weart, A. M. McCarty and H. C. Pontius.

International Dayton Aeroplane Club, of Dayton; O. J. Needham and others.

WEST VIRGINIA.

Byron Domestic Coal Company, Fairmont, W. Va.; capital, \$25,000. Incorporators: H. H. Staggers, J. B. Staggers, and A. G. Martin, of Fairmont; Isham Keith and Philip Steptoe, of Clarksburg, W. Va.

Foy-Proctor Company, Nashville, Tenn.; to do general contracting and engineering business; capital, \$25,000. Incorporators: J. D. Foy, R. L. Proctor and E. W. Johnson, of Nashville; Humphrey Foy, of Etahala, Ala., and C. L. Proctor, of Athens, Ga.

Harrison-Barbour Coal Company, Fairmont, W. Va.; capital, \$500,000. Incorporators: J. A. Clark, S. G. Race, H. F. Smith, J. R. Linn and E. M. Showalter, all of Fairmont, W. Va.

Cattrell Brothers Company, of Wier-ton, Hancock county; to manufacture and deal in patent plasters, cement products and builders' supplies. Capital, \$20,000. C. S. Cattrell, H. B. Cattrell and Cline Fredericks, of Holliday's Cove; William Tudor, of Toronto, O., and T. T. Hambrick, of New Cumberland, W. Va.

Broad Oaks Development Company; to construct and operate a water works system for Broad Oaks, a suburb of Clarksburg. Capital, \$10,000. J. M. Coffman, C. W. Halterman, George L. Duncan, R. T. Lowndes and George W. Shuttleworth, all of Clarksburg.

Virginia Fire Clay Manufacturing Company, New Cumberland, W. Va.; authorized capital stock, \$50,000. Incorporators, N. W. Ballantyne, C. A. Ballantyne, Lucie B. Ballantyne, Ola M. Brown and E. W. Brown, all of New Cumberland.

Cattrell Brothers Company, of Wier-ton, Hancock county, West Va.; to deal in patent plasters and builders' supplies; authorized capital stock, \$20,000. Incorporators, C. S. Cattrell, H. B. Cattrell and Cline Fredericks, of Toronto, O., and T. T. Bambrick, of New Cumberland, W. Va.

West Run Coal & Coke Company, Scottdale, Pa.; with works in Monongalia county, West Va.; authorized capital stock, \$300,000. Incorporators, Charles H. Loucks, E. J. Atherton, W. P. Hurst, W. L. Hasness and Homer C. Deffenbaugh, all of Scottdale.

Kanawha & Ohio Valley Traction Company, Charleston, W. Va.; authorized capital stock, \$100,000. Incorporators, F. P. Grossepup, Upshur Higginbottom, George S. Couch, H. A. Robinson, S. P. Smith and F. A. Abney, all of Charleston.

Virginia Steamship Company, Duluth, Minn.; authorized capital stock, \$150,000. Incorporators, R. E. Ireland, M. Andrews, S. W. Folsom, W. P. Scaufele and J. S. Ashley, all of Cleveland, O.

Gas Belt Brick Company, Topeka, Kan., with works in Kansas, Oklahoma, Texas, Arkansas, Louisiana and Missouri; authorized capital stock, \$750,000. Incorporators, John J. Jones, James W.

Reid, Ernest Gordon, A. N. Allen and F. W. Allen, all of Chanute, Kan.

Modern Gin & Compress Company, Duluth, Minn.; with works in Little Rock, Ark.; authorized capital stock, \$750,000. Incorporators, Thomas J. Davis, S. B. Irvine, W. H. Gurnee, J. A. P. Neal and E. L. Kimball, all of Duluth.

Kinney Steamship Company, Duluth, Minn.; authorized capital stock, \$155,000. Incorporators, William Wisner White, Tracey H. Duncan, N. B. Snively, B. V. Sop and S. H. Holding, all of Cleveland, O.

INDIANA.

Warner Engine Company, Muncie; capital, \$50,000; manufacturers. Directors: Dee O. Skillen, Hugh L. Warner, John F. Warner, Thomas W. Warner and E. W. Skillen.

Parry Auto Company, Indianapolis; capital, \$1,000,000; manufacturers. Directors: David M. Maxwell, O. and Addison J. Parry, Warren D. Oakes and William C. Teasdale, Jr.

Indianapolis Drop Forging Company, Indianapolis; notice of increase of capital by \$10,000. Walter Kessler, president.

Studebaker Brothers Company, Indianapolis; capital, \$40,000; vehicle dealers. Directors: Frank Staley, Frederick S. Fish, Clement Studebaker, Jr., Nelson F. Riley and Scott Brown.

Brookston Automobile Company, Brookston; capital, \$7,000; manufacturers and dealers. Directors: Milton Gay, J. H. Kneale, W. C. Halstead, John J. Nagle, Ira Bordner, Charles J. Murphy and R. C. Alkire.

A. C. Torbert Company, Hammond; capital, \$200,000; machine and implement manufacturers. Directors: A. A. Basse, L. E. Otte and N. S. Smyser.

The Manufacturers' Paint & Power Company, South Bend; notice of issuance of \$30,000 preferred stock. Stephen A. Knoblock, president.

Loughner Coal Company, Seelyville; notice of dissolution of corporation; John Loughner, president.

Adamantine Concrete Company, South Dakota; brick manufacturer; capital, \$1,000,000; certified in Indiana; Augustus Bruner, president.

ILLINOIS.

A. J. Linderman & Hoverson Company, Chicago; dealing in metal ware; capital, \$500,000; Wisconsin corporation. Incorporator, Charles Arnold, No. 99 Randolph street, Chicago, Ill.

Cable Stay Fence & Gate Company, Clinton; general manufacturing; capital, \$15,000. Incorporators: Edwin J. Oelze, S. A. Cunningham, V. F. Browne, Clinton, Ill.

Argo Fuel & Supply Company, Marquette building, Chicago; dealing in fuel and building materials; capital, \$10,000. Incorporators: A. E. Scheppers, F. W. Raymond, Arthur A. Basse.

Success Fuel Burner Company, 112 Clark street, Chicago; general manufacturing; capital, \$50,000. Incorporators: Charles D. Wright, Adolph Kaestner, J. A. Mackenzie.

Automatic Vacuum Cleaning Company, Bloomington; manufacturing vacuum cleaners; capital, \$2,500. Automatic Vacuum Cleaning Company, Bloomington, Ill.

American Asphaltum & Rubber Company, Maine corporation; manufacturing

mineral rubber products; capital, \$500,000. Parker H. Hoag, No. 1803 Fisher building, Chicago, Ill.

Sea Wall Mould Company, Chicago; manufacturing concrete tiling; capital, \$10,000. William H. Fahrney, No. 653 First National Bank building, Chicago, Ill.

Illinois Cement Burial Vault Company, Champaign; manufacturing cement products; capital, \$50,000. Savage & Woods, Champaign, Ill.

Hanreddy Brick Company, Chicago; manufacturing clay products; capital, \$10,000. Otto E. Nichoff, Chamber of Commerce, Chicago, Ill.

NEW JERSEY.

Imperial Plumbing Supply Company, No. 11 Clinton street, Newark, N. J.; plumbing supply business; capital, \$50,000. Incorporators: Otterson E. Baldwin, No. 11 Clinton street, Newark, N. J.; William De Vogel, No. 15 Union avenue, Wallington, N. J.; Thomas R. Collins, No. 20 Offord street, Passale, N. J.

Standard Truck Manufacturing Company, No. 419 Market street, Camden, N. J.; mechanical and electrical engineers, truck builders, tool makers, wood workers, founders, etc.; capital, \$250,000. Incorporators: F. R. Hensell, George H. E. Martin, John A. MacPeak, all of No. 419 Market street, Camden, N. J.

Newark Siegwart Beam Company, No. 525 Main street, East Orange, N. J.; manufacture Siegwart beams and other building materials; capital, \$100,000. Incorporators: Charles O. Geyer, Frank E. Ruggles, Gaston G. L. Valle, all of No. 525 Main street, East Orange, N. J.

The Electric Accumulator Company, No. 419 Market street, Camden, N. J.; manufacture electrical accumulators, undulating current generators and electrical machinery, etc.; capital, \$200,000. Incorporators: F. W. Reeves, W. L. Mecks and T. C. Duff, all as above.

S. H. Roberts Boiler & Tank Company, No. 419 Market street, Camden, N. J.; manufacturers, boilers, tanks, air-compressors, pumps, etc.; capital, \$125,000. Incorporators: Fred M. Stroeker, W. C. Jones, V. A. Murray, all as above.

Canister Company, Phillipsburg, N. J.; manufacture cans and canisters; capital, \$200,000. Incorporators: Charles C. Woods, Easton, Pa.; Reginald W. Darnell and James F. Adams, Phillipsburg, N. J.

Pittsburgh Tack & Nail Company, Newark; to manufacture tacks, nails, glazier points, shoe nails, hardware specialties, etc.; capital, \$100,000. Incorporators: Irving T. Hunter, A. Brice Crane, Beatrice V. Bicknell, No. 800 Broad street, Newark.

Keystone Ice Machine Company, No. 522 Market street, Camden, N. J.; construct ice plants, etc.; capital, \$50,000. Incorporators, Raymond Jenkins and Robert Adams, both of Philadelphia, Pa.; George V. Dee, Media, Pa.

Montana, Wyoming & Southern Railroad Company, No. 15 Exchange Place, Jersey City; operate railroads, tramways and terminals; capital, \$5,000,000. Incorporators, Frank S. Gannon and William H. Seibert, No. 2 Rector street; William C. Langley and Charles W. Fernald, No. 10 Wall street; James J. Molley, No. 328 Ninth avenue, all of New York.

David Buist Plumbing & Heating

Company, Bernards Township, Somerset county, N. J.; plumbers, sanitary fixtures and supplies; capital, \$100,000. Incorporators, David Buist, Jeannie A. Buist, Horace G. Gall, Peter S. Halstead, Harry Wright, all of Bernardsville, N. J.

Pope-Hartford Company, No. 9 Clinton street, Newark, N. J.; manufacturing automobiles, real estate, etc.; capital, \$30,000. Incorporators, Charles C. Pilgrim, Mary E. Lane, No. 9 Clinton street; John M. Hulbert, No. 356 Belleville avenue, all of Newark.

Linkroum Automobile Company, No. 239 Halsey street, Newark, N. J.; manufacturing automobiles, motors, etc.; capital, \$20,000. Incorporators, Courtlandt Linkroum and William H. Linkroum, No. 215 Union street, Hackensack, N. J.; Charles R. Erith, No. 104 Lafayette street, Jersey City.

Essex Count Overland Company, No. 209 Halsey street, Newark, N. J.; manufacturing automobiles, moto cars, motor cycles; capital, \$100,000. Incorporators, William F. Acker, No. 38 Spruce street; Roland D. Crocker and Harry H. Poole, No. 776 Broad street, all of Newark, N. J.

DELAWARE.

Atlanta Mines Company, Delaware Trust Company; capital, \$2,000,000. Incorporators, F. M. Shive, S. E. Roberson and Harry W. Davis, all of Wilmington, Del.

WELSH TIN-PLATE INDUSTRY.

Consul Jesse H. Johnson, of Swansea, furnishes the following statistics covering the tin-plate and sheet steel industry of South Wales:

At the end of May, 1909, there were 398 tin plate mills and 52 sheet steel mills in operation in South Wales, and the total number of employes was 22,500. Large consignments of tin plates are exported to the Far East, China, and Singapore, and the United States continues, under the drawback clause of the tariff, to be a steady market for this special trade. During the month of April the following quantities, in tons, were exported to the countries mentioned: United States, 6,250; British East Indies, 4,692; Germany, 2,989; France, 1,895; Netherlands, 3,752; all other countries, 19,685; total, 39,263 tons. During the same month 5,683 tons of black plates were exported.

It is difficult and confusing to associate and compare the foregoing figures with the quarterly returns (declared exports) sent from this office, for the reason that during the course of 12 months thousands of tons of tin plates are invoiced through the Liverpool consulate, although such tin plates are manufactured in this district. For instance, the Minnesota sailed for Philadelphia on June 8, 1909, and, according to its manifest, had 15,400 boxes of tin plates, weighing a little over 1,061 tons, for all of which consular invoices passed through the Liverpool consulate.

Quotations June 23 on the Swansea Metal Exchange are as follows: Tin plates: I. C., 20 by 14, \$2.95 per box; I. C. wasters, \$2.86 per box; odd sizes, basis, \$3.01 per box. Block tin, \$646.02 per ton; spelter, \$107 per ton; steel bars, \$21.89 per ton.

The quantity of tin plates shipped during the week ended June 19 was 699,954 boxes, and the stock in dock warehouses 204,868 boxes.

FIRES AT INDUSTRIAL PLANTS.

Key West, Fla. — Florida East Coast Railway commissary and resident engineer's building containing supplies used in the construction of a new road including a marine railway and a large quantity of firewood, 8,000 bags cement and other supplies burned to the ground August 10. Total loss \$25,000. Partly insured.

* * *

Wheeling, W. Va. — Plant of Wheeling Metal & Manufacturing Company, in South Wheeling, destroyed by fire August 11, with a loss of \$50,000, covered by insurance. A new plant is being erected at Glendale, a suburb.

* * *

Ogdensburg, N. Y. — The Flos shade roller factory destroyed by fire August 6. The loss was \$50,000, well insured. Defective wiring was the cause. The plant will be rebuilt.

* * *

Akron, O. — Buckeye rubber plant partially destroyed August 12, with hundreds of tons of raw material. Loss \$200,000, partially insured.

* * *

Mt. Vernon, N. Y. — Steam heating plant of William McGonigal Company, destroyed August 10. Loss \$15,000.

* * *

New Orleans. — The authorities are investigating the fire in the Empire Rice Mill, August 6. Loss \$15,000.

* * *

Trenton, N. J. — Works of Imperial Porcelain Company, destroyed August 7; loss \$90,000, fully insured.

* * *

Wancelona, Ill. — Saw mill of Antrim Iron works destroyed August 6; loss \$30,000; insured for \$10,600.

* * *

Rochester, N. Y. — George P. Bortle Company, 10 Graves street, damaged \$2,000 August 4. Fire started in engine room.

STEEL MINE CARS.

The New River & Pocahontas Coal Company has placed an order with the Arthur Koppel Company, Pittsburgh, for 100 additional all steel mine cars for its mines at Gentry, W. Va. The Koppel company recently shipped 300 cars to the mines mentioned.

NEW BRIQUET BULLETINS.

"Binders for coal briquets," by J. E. Mills, issued as Bulletin 343, by the Geological Survey, describes the characteristics of good briquets and the conditions governing the use of materials used to hold the coal particles together, and the result of laboratory investigations of binding materials, both inorganic and organic.

The experiments reported show that the three most important binders are (1) the heavy residuum of petroleum, known to the trade as asphalt, (2) water-gas-tar pitch, and (3) coal tar pitch, the first named requiring the smallest percentage and costing the least. Coal-tar pitch is derived from coal, and is therefore widely available; the other two binders named, being derived from petroleum, can be had in most oil regions. The notes given by Mr. Mills cover 44 different binders, including wood products, sugar-factory residues, starch, tars and pitches from coal, natural asphalts, petroleum products, etc.

Bulletin 363, entitled "Comparative tests of run-of-mine and briqueted coal on locomotives," by W. F. M. Goss, is prefaced by notes on the briquet industry in Germany, Belgium and France, and includes specifications for briqueted fuel used by the State railways of Prussia, Belgium and by the Paris-Orleans railway of France. The paper describes comparative tests made at the locomotive testing plant of the Pennsylvania Railroad Company, at Altoona, Pa. The conclusions reached by Mr. Goss are favorable to the use of briquets. The paper also includes notes on tests of briquets in actual service on locomotives and on the torpedo boat Biddle. A series of tests on the Atlantic Coast Line railroad, with New River coal and briquets under practically identical conditions gave results decidedly in favor of the briquets, the amount of fuel consumed per car mile being 15.8 pounds of coal, against 12.5 pounds of briquets.

Bulletin 366, by D. T. Randall, is entitled "Tests of coal and briquets as fuel for house-heating boilers." This describes tests conducted in the plant used to heat the structural materials laboratory of the Geological Survey at St. Louis, and of the University of Illinois engineering experiment station at Urbana. These tests showed no advantage in briquets over coal of a suitable size for house-heating boilers. Briquetting a good bituminous coal for domestic use would be justified only when slack is used for material, and the gain from briquetting would lie almost entirely in the more favorable size of the fuel.

Subscribe for the Industrial World.

Rail Handling Magnets for the Gary Plant

During the past few years the saving that can be accomplished by the use of lifting magnets, has been generally recognized and many new applications of magnets have been made. The Electric Controller & Manufacturing Company, of Cleveland, O., is the pioneer in this field and has not only been the first to introduce improvements in design but has been the first to design and apply new types of magnets to new kinds of service.

point of the rail mills and railroads to ship rails in locked sections, yet this is an arrangement of rails which is particularly difficult to handle with a magnet.

The difficulty arises from the fact that the top layer of the rails practically short circuits the magnetic field and none but a very powerful and carefully designed magnet would have sufficient strength to penetrate the top layer of rails and lift the bottom layer.



Rail-Handling Magnets in Use at Gary.

Such an application requiring a new design of magnet, is the handling of the entire output at the rail mill of the United States Steel Corporation's plant at Gary, Ind. Electric power has been used throughout at Gary, even to the driving of the rolls by 6,000 horsepower motors. The handling of the finished rail by electric power through the use of lighting magnets, was therefore a logical conclusion providing a successful magnet could be made. The handling of the rail output by means of magnets was particularly desirable from the following considerations:

1—Sufficient labor alone could be dispensed with to make the application commercially attractive.

2—A large saving in time of handling would be effected.

3—Very much less timber spacing material was necessary in loading.

4—There being no possibility of bending the rail when loading by magnets, loss on this score would be eliminated.

While it is desirable from the stand-

The magnets which were furnished by the Electric Controller & Manufacturing Company have been very successful and have lifted, not only locked sections of 33-foot rails, but have also successfully lifted locked sections of 60-foot rails with an aggregate load of 15 tons.

ENGLISH GALVANIZED IRON ASSOCIATION DISSOLVES.

Regarding the dissolution of the Galvanized Iron Trade Association, which came into existence in Great Britain March 28, 1905, and collapsed the last week in July of this year, the "Colliery Guardian," of London, says:

The event is one of the most momentous in the British iron trade that has happened for a long while. The importance of the association will be seen when it is stated that it is estimated that the annual capacity of the alliance was an output of not less than 450,000 to 500,000 tons of galvanized corrugated iron, and it has even attempted international

relationships with America. This year, up to the end of last month, the exports have averaged 38,500 tons per month; last year the average for the whole year was 32,500 tons per month, and the year before as much as 39,000 tons monthly.

The effect of the break up of the combine upon prices has been sensational. Values, which before were steady at £12 10s per ton f. o. b. Liverpool, or equal, for 24-wire gauge corrugated galvanized sheets, packed in bundles, have now fallen to £10 10s, and in a few cases even, it is said, to £10 per ton. Such a drop, occurring suddenly, is without a precedent, and the buying market has been completely disorganized. The official quotation has been £12 10s since January 1908, or a period of 18 months, and it has been the phenomenal success attained by the makers' association in preserving prices at so high a level for so long in the face of the trade depression that has constituted the chief wonderment of the combination.

The black-sheet trade has suffered a sympathetic relapse, though the reduction here has naturally been only insignificant compared with the fall in the finished article. Black doubles are now quoted down to £7 and £7 2s 6d per ton. Another branch of the market in which values have taken a downward course is nut and bolt bar iron. The quotation for this common iron is now £5 12s 6d, which producers declare is 2s 6d per ton under "cost."

EXPORTS FOR JUNE.

According to the advance sheets of the Monthly Summary of Commerce and Finance, issued by the Department of Commerce and Labor, exports of iron and steel and their manufactures for June, 1909, amounted to \$1,161,121, comparing with \$1,101,176 in the year previous; and for 12 months, \$12,136,577, which compares with \$15,280,328 in the 12 months preceding. Imports of iron and steel and their manufactures for June and 12 months were \$2,461,910 and \$22,439,787, comparing with \$1,759,651 and \$27,607,909 in the year preceding.

Belgian steel manufacturers have just secured several large railroad steel-rail contracts, in competition with international interests. These include 20,000 tons for Siamese railroads and 13,000 tons for Argentina. It is stated that low quotations were made.

It is stated that arrangements have been completed by American manufacturers of agricultural implements for the establishment of a large factory in St. Petersburg. Russian merchants are interested. The capital of the new company is 12,000,000 rubles. The International Harvester Company is said to be behind the new concern.

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THE NEW TARIFF.

NOW that a new tariff law has actually been passed it is interesting to observe how it is taken by the public. The reception is largely in accordance with previous views of this complex and rather vexing subject. As to the iron and steel department, the "Bulletin of the American Iron and Steel Association" may naturally be taken as voicing the view of the extreme protectionist wing. The "Bulletin's" editorial comment commences with "an entirely new revenue measure" and ends with "the Dingley tariff should have been let alone." The editor of the "Bulletin" points out that the tariff agitation "has really effected a revolution in our tariff legislation, as the new tariff marks a positive and long step toward free trade, or, what is virtually the same result, a tariff for revenue"; that it is Mr. Taft's tariff, Mr. Taft having inherited from Mr. Roosevelt the idea of "rich male-factors" who were largely manufacturers and, through Mr. Roosevelt, Mr. McKinley's Buffalo address, which "said, in good free trade style, that if we did not buy from other countries we could not expect to sell to them"; that the new tariff shows extreme favoritism, protecting agricultural products, except hides and cattle, as much as ever, "while our great iron and steel industries are given much lower than the Dingley rates, in some instances the reductions amounting to 30 and 40 and even 50 per cent," and reducing lumber and putting hides on the free list while all the

pottery rates are retained without change; that Mr. Taft subscribed to the Democratic doctrine that "the tariff is a tax" when he said that reductions should be made for the benefit of "consumers," and finally that "the Taft tariff" will not give satisfaction "to either protectionists or their opponents."

It is not likely that every one will agree fully with the expressions in the "Bulletin." The revision in iron and steel duties hardly justifies the strong language used. The so-called Taft tariff is not much of a step toward free trade except in items which, as regards the iron and steel trade as a whole, are not so very important.

The friends of the new tariff—it is to be presumed that in so large a country it must have some—will not feel much hurt at the charge of discrimination or favoritism. The object which the revisionists set out to accomplish was to modify the tariff and straighten out the irregularities. Certainly the primary idea was not to make a horizontal reduction in all the rates; the expressions were perfectly clear in that regard; had they not been, the question could not possibly have been raised whether the revision should be downward or upward. The friends of the tariff, therefore, are likely to regard the charge of discrimination as really a vindication.

Again, it is not likely that regrets will be induced by the charge that the new tariff "will not give satisfaction to either protectionists or their opponents." The intimation is simply that the new tariff comes somewhere between the extreme views and that is what any law should do, unless it can be proved, who is left to prove it.

It is a curious fact that with all the discussion there has been regarding the iron and steel duties in the past year or more, little if any emphasis has been placed directly upon the fact that the Dingley tariff law was approved July 24, 1887. That is really an extremely important fact. If one search the statistics of iron and steel prices, or consult manufacturers who were in the trade in the nineties, he will find beyond peradventure that the period of lowest prices in the whole history of the American iron and steel trade was the mid-summer of 1897. Whether or not the tariff has anything to do with domestic prices, the bare fact stands out that the period of lowest prices in history corresponds absolutely with the time when the Dingley law was enacted.

The Dingley law was intended to be strictly a protectionist measure. Its iron and steel duties were in nearly every instance specific, not ad valorem, and formulated when prices were at their lowest there would be room for argu-

ment that they would fall down when conditions became extremely prosperous and all prices, whether at home or abroad, experienced heavy advances. So there was ample room for the argument that even to leave the Dingley duties to the conditions, while to reduce them at all would be a hardy thing to do. That argument was not made, by the ultra protectionists, with the force with which it could have been made. It is true that at the tariff hearings and on other occasions specific references were made as to how costs of manufacture advanced, but these arguments were rather apologetic in their nature, as if the advances were merely unfortunate circumstances which had to be faced just because they existed.

If the so-called "Taft tariff" is a long step toward free trade, or at least toward a revenue tariff, it should be interesting to attempt to observe where free trade or revenue comes in. It will be well first to see what has occurred in the past. The duties collected on iron and steel and on all imports have been as follows in the last four fiscal years for which statistics are available:

Duties Collected on Imports.

Year ended

June 30.	Iron & steel.	All imports.
1905	\$8,422,838	\$258,426,295
1906	9,784,043	293,910,396
1907	11,930,389	329,480,048
1908	9,331,328	282,582,895

It must be remembered that the "iron and steel" on which the above duties were collected include much more than the forms of iron and steel as the industry knows them, since there are included cutlery, firearms, machinery, etc. The value of the domestic production of the articles included cannot be estimated precisely, but easily exceeds a billion dollars, and may exceed one and a half billions. Accordingly the duties collected amount to much less than one-tenth of one-per cent of the total value of the domestic material with which the imported material competed.

Again, it must be remembered that the totals given above are the total amounts of duty collected, and from these there were drawbacks. The drawbacks on iron and steel averaged about \$2,000,000 a year, while the total drawbacks, on all imported material, averaged between \$5,000,000 and \$6,000,000. The average iron and steel duties collected amounted to about \$10,000,000 a year in the four years in review, or about \$8,000,000, less the drawback, while the total duties collected, less drawback, amounted to about \$300,000,000 a year, so that iron and steel contributed less than three per cent of the total. The value of iron and steel produced in the United States is obviously more than three per cent of the

total production of all materials in the United States which if imported would be subject to duty.

This \$8,000,000 of actual revenue has been derived from so wide a variety of iron and steel lines that, the reductions made being really in but a few lines, and moderate at that, it would be difficult to pick out lines from which much larger revenues may be expected to be derived through the operation of the new law. Taking 1906 as the most nearly normal year, there are only three lines which produced as much as a million dollars in actual revenue, these three being "pig iron," cutlery, and "machinery not elsewhere specified." The term pig iron really includes ferromanganese and spiegeleisen, these two bringing in \$600,000, while ordinary pig iron brought in \$422,000. The duty on all is reduced from \$4 to \$2.50, and as imports of spiegeleisen and ferromanganese cannot be expected to be increased materially by the lower duty it is hardly likely that the total revenue will be increased. Cutlery and machinery, on the other hand, are not materially reduced by the new law. If the step toward a revenue basis is by reducing duties on articles not hitherto imported in large quantities, but likely to be imported in large quantities under the new tariff, it will be hard to find the articles in the iron and steel schedule.

It may do no harm to look at the latest general import and export statistics in the light of Mr. McKinley's Buffalo address, when he said we cannot expect to sell if we do not buy. The statistics for the fiscal year 1909 show the smallest merchandise balance of trade in our favor since 1897, although the total movement, imports and exports combined, has almost doubled. A large part of the apparent favorable balance of trade is well known to be made up by undervaluation of imports and overvaluation of exports, together with freights paid to foreign vessel owners. In these respects, we must have a favorable balance of trade in proportion to our total business; if it increases, the favorable balance should also increase that we may maintain our position. Nevertheless we find that in 1898 we had a total movement of \$1,848,000,000 and a favorable balance of \$615,000,000, whereas in 1909 we had a total trade of \$2,975,000,000 and a favorable balance of only \$351,000,000. Indeed, the balance, in June last was against us for the month, the first time since 1897. There may have been a question as to what should be done; there is no question that a condition had arisen which required some treatment. The statistics furnish excellent arguments for the establishment of an American merchant marine, now that the best has been done with the tariff that can be expected for awhile.

RETROSPECTIVE.

OUR weekly glance into our issue of an even 20 years ago is for the general purpose of obtaining instances of the changes which have occurred in the iron and steel industry. Our look into the issue of August 16, 1889, however, shows something which leads us to depart from the particular field of iron and steel. It is a short article reprinted from the "Electrical Engineer" and headed "From London to Paris in two hours." It describes a "water railway" exhibited in Paris, the carriage running on a single rail. Water under high pressure is forced under the slide blocks which replace wheels, whereby the carriage is supported in what is considered an almost frictionless way. "High pressure water taps, distributed along the permanent way, are directed against a rack under the carriages, and force the train along at a speed, it is claimed, of 60 to 120 miles an hour, and the chairman of the company owning the invention contemplates a journey from London to Paris (when the channel tunnel is completed) in two hours." Here staid technical journals went wrong. How glibly the completion of the "channel tunnel" is spoken of, and what would have been said of a prophet in those days who would have foretold that man would fly across the channel before he tunneled under it!

There is an account, in this issue of 20 years ago, of a paper by James Colquhoun before the South Wales Institute of Engineers on metallic railway sleepers, in which he says the question was "rapidly coming to the front in consequence of the increased cost of wood, the short life of the creosoted sleeper," etc. And now, 20 years later, we are still hammering away along the same lines.

Our 20 years' retrospect brings us back to the inception of the "whaleback" in lake navigation. The "whaleback" had a short, but very active life. We find an article on "A boat built like a whale," showing that the familiar term had not then been adopted. It describes the boat then recently launched at Duluth, and states that "the inventor hopes to change the marine architecture of the lakes for coarse freight carriers." The change was effected, but within a decade the famous whaleback started to go out. It is true their inception made a change, but in their supplanting by the immense freighters of to-day a still greater change was wrought, both changes occurring within 20 years.

Catalogues of machinery and other manufacturers make a valuable library nowadays, but their value is not entirely new. Twenty years ago such a library was valuable. In our advertising col-

umns we find an advertisement of the Cambria Iron Company, stating that as all its catalogues were lost "through the recent flood disaster," it will be pleased to receive latest catalogues at once from manufacturers in its line. This referred to the historic Johnstown flood.

THAT DULUTH STEEL PLANT.

A GREAT deal of talk is being indulged in regarding the steel corporation's new steel plant at Duluth. Recent press dispatches even have it that the plant "will have a capacity of 1,000,000 tons of finished product, or one-third of the capacity of the Gary plant." That is doubling up with a vengeance, for the capacity of the Gary plant is thereby itself overstated by about 50 per cent. Gary when completed along the lines laid out at present will produce not over about 2,000,000 tons of finished material a year. The Duluth plant will probably run at about a quarter million tons.

The advantages set forth for the Duluth plant are largely on paper. The saving in power, for instance, by the use of coke oven and blast furnace gas, is not one which requires the atmosphere of the state of Minnesota. It is a feature of the iron and steel industry, and there is quite a question whether the saving is as great as promised.

These western plants appear large because they are in relatively new territory. The prospective capacities mean nothing to Pittsburgh. Allegheny county has made almost 6,000,000 tons of pig iron in a year, and will make considerably more than 6,000,000 tons the next time its capacity is fully engaged, because the capacity has been increased. Gary is rated at 1,200,000 tons, while Duluth will probably be 300,000 tons. They are large plants in a way, but they have nothing on the Pittsburgh district.

It must not be forgotten that the inception of the Duluth plant was a political move. The State of Minnesota was becoming oppressive with its taxation. The recent failure of the tonnage tax on iron ore, through Governor Johnson's veto, has probably settled the search for new methods of taxation in Minnesota for several years and the Duluth plant is not likely to be a very large affair.

FOR FAR EASTERN BUREAU.

President Taft has left entirely in the hands of Secretary of State Knox, the formation of the far eastern commercial bureau of the State department, recently authorized by Congress. Mr. Knox will cast about for a suitable head to this important branch of the service and the President will approve his choice.

Market Conditions, Prices in Producing and Buying Centers

Railroads in Market With Urgent New Orders.

PITTSBURGH—With increasing inquiries for iron and urgent demands for the hastening of work on railroad equipment and track supplies, the pig iron market divided interest with the railmakers and the car shops in Pittsburgh district during the week just ended.

Orders aggregating over 50,000 tons of standard rails, the greater part of which went to the leading interest, bade fair to strengthen the only weak feature in the local situation—the rail mills. The largest single order was put out by the Baltimore & Ohio, which contracted for 20,000 tons, of which 12,000 goes to the Carnegie Steel Company, 3,000 to the Illinois Steel and 5,000 to the Pennsylvania and Bethlehem Steel. This will mean additional rail capacity at the Edgar Thomson plant at Braddock before the close of the month.

Supplementary orders for steel cars by the Pennsylvania, and the placing of a part of the Baltimore & Ohio's 8,000-car order with Pittsburgh concerns also improved the situation. The labor troubles of the Pressed Steel Car Company, however, prevented that concern from securing any of this new business. As an indication of the Pennsylvania's view of the car situation, the Altoona shops have been ordered to prepare to turn out 3,000 steel cars of various types by June of next year.

With the semi-finished steel makers pushing their mills to the utmost, there is a shortage in materials for the structural men that bids fair to delay building operations planned for the coming fall. The fabricating shops, which during July could get deliveries in three weeks, now find it impossible to get deliveries from the mills in less than eight to ten weeks. Eastern mills are reported more than 90 days behind in deliveries. It would be difficult to get steel on contracts being let now in time to complete proposed structures in time for occupancy May 1 of next year, and this fact may result in the postponement of some building now projected.

Railroad contracts closed during the week just ended have further boosted the structural demand. The Baltimore & Ohio has placed orders for new bridge work in Ohio; the Philadelphia & Reading let contracts totalling 1,000 tons for a series of small bridges on the Perkiomen branch, near Philadelphia, to the McClintic-Marshall Construction Company, Pittsburgh, the fabricating for which, however, will be done at the

company's Eastern plant; the Ft. Pitt Bridge Company, secured contracts for the new South Fork bridge at Johnstown, and several other pieces of railroad work, aggregating 1,500 tons.

Though the market on all grades of pig iron is undoubtedly on the upward trend with higher prices almost in sight, reports of huge sales during the week just ended could not in all cases be verified. The Republic Iron & Steel bought 15,000 tons of Bessemer of W. P. Snyder, for delivery this year, and is in the market for 5,000 tons more. This purchase is for delivery to the Youngstown Sheet & Tube Company, to repay tonnage borrowed of that concern earlier in the year. The Youngstown Sheet & Tube Company also bought about 10,000 tons of Bessemer from the Bessemer Pig Iron Association, and is in the market for 5,000 tons more. Both these sales were made at \$16 Valley, which would be \$16.90, Pittsburgh.

In addition, the Jones & Laughlin Steel Company is in the market for 15,000 tons of Bessemer and 10,000 tons of basic—their present furnaces being unable to keep pace with their finishing departments. A prominent Pittsburgh sanitary interest has filled its wants for the remainder of the year by the purchase of some 9,000 tons of foundry and forge. Some of the No. 2 foundry included in this sale is said to have been secured at an equivalent to \$15.25, Valley, though the general impression is that No. 2 foundry cannot be secured for the fourth quarter delivery at less than \$15.50 Valley.

A western consumer also closed during the week for about 9,000 tons of basic iron for delivery through to December—the price, however, being subject to monthly adjustment.

The most significant pig iron development of the week, however, as viewed by some brokers, was the anxiety of the Standard Steel Car Company, to get into the market at the present time for 100,000 tons of basic for the requirements of its new open hearth steel plant at Butler, to be built by its subsidiary car wheel company. Work on the plant has been barely begun, and the inquiry is for next year's delivery—most of which probably would be for the last half of 1910. Few furnaces cared to go so far into the future as to quote on this inquiry. In fact, on basic and foundry irons, the furnace interests are practically refusing to quote prices for next year's delivery.

The market in foundry iron is unusual in the range to be found in the prices

secured in actual sales. While the ruling prices undoubtedly have been \$15.50 and even up to \$15.75, some small sales have been made at as low a figure as \$15.25, Valleys. Forge iron represents the same peculiar range, furnaces almost side by side having been reported as getting prices 50 cents apart. Sales were reported all the way from \$14.25 to \$14.75, Valleys, for forge. Malleable is quoted at \$15.50 to \$15.75, Valleys.

Offers of premiums on basic billets for immediate delivery were reported during the week in Pittsburgh district. As high as \$26 has been obtained on sales of small lots. The ruling prices are still \$24 for Bessemer and \$25 for open hearth, Pittsburgh. In steel bars the demand also is greatly in excess of the present output, though the prices remain at 1.30 and 1.35, Pittsburgh. Some of the independents are entirely out of the market, even at the latter price.

On iron bars, the western mills of the Republic Iron & Steel Company, are reported as having all the business they can handle double turn. The demand has strengthened greatly, and 1.45c, Pittsburgh, is being done only on attractive business, 1.50c being the generally quoted price for future delivery.

The demand for light rails has fully kept pace with the standard rail orders, which are now the heaviest of the year. The Carnegie Steel Company secured 12,000 tons of the Baltimore & Ohio's rail orders, besides some 7,000 scattering. Several large contracts for heavy trolley rails are said to be pending. The increased orders for steel cars from the New York Central, Pennsylvania and Baltimore & Ohio, during the week, also will create a strengthened demand for plates. The Pennsylvania's recently announced new construction work in Western Ohio and Indiana will mean much additional rail business and increased demand for structural material.

The contract for 500 tons of sheet piling for coffer dam construction for the new Baltimore & Ohio bridge over the Cuyahoga river near Cleveland, was awarded the Jones & Laughlin Steel Company. The fabricating work on the new bridge will be done by the Pennsylvania Steel Company, of Steelton. The steel piling order is one of the largest placed for this product recently, outside of several Western irrigation contracts. The Jones & Laughlin Company also will furnish the 2,000 tons of steel needed for the new Cleveland Baseball park, the contract for which was awarded during the week to the Forest City Iron & Steel Company, Cleveland.

Fabricating shops are handicapped by the delays in the delivery of steel by the mills. The contracts for the week are not unusually heavy, but most of the local erecting companies are not looking for much immediate business. For instance, a shortage of steel is delaying work on the new Second National Bank building, Pittsburgh, on which the Thompson - Starrett Company has the contract. The steel for the 800-ton contract for the new Standard Oil office building, Pittsburgh, on which the Thompson-Starrett Company secured the contract during the week, probably will be made by the American Bridge Company. Heyl & Patterson, Pittsburgh, secured the contract for the structural work on the new Philadelphia & Reading docks at Superior, Wis., which will require about 3,500 tons. The Carnegie Steel Company will likely furnish the 13,500 tons of material needed in the McClintic-Marshall contract for the Kansas City Terminal Railway bridge, awarded a week ago.

Two 14-car transfer barges for the lower Mississippi have been completed by the American Bridge Company, and were shipped during the week. The American is now starting work on three bulk oil barges for a Mississippi transportation company—the first steel bulk oil barges to be used in inland transportation.

There is an actual shortage in merchant pipe for immediate deliveries, though no large contracts have been reported in the past week or two. Small orders have filled the mills to their capacity. There is still talk of an early advance in prices, though quotations remain the same. In sheets and tin plate the market is much more active. The American Sheet & Tin Plate Company report further increases in capacity, and on August 11 were running 140 sheet mills and 135 tin mills, as against 138 sheet mills and 124 tin plate mills the week before.

The Carnegie Steel Company further increased its capacity during the week. The open hearth furnaces at the North Sharon works were fired on August 11, and the company is making the first steel at this plant since October, 1907. The blooming mills and angle mill also resumed operations, putting all departments of that plant at work. The company now has but one plant idle, that at Columbus, which will resume shortly. The new No. 6 Duquesne blast furnace of the Carnegie Steel Company was blown in during the week, but the company's total active pig iron capacity remains at 51 out of 59 stacks, is one of the Carrie furnaces has been put out for repairs.

Rail Tonnage Gives Market New Impetus.

NEW YORK—The rail orders placed during the week just ended have given an additional impetus to the market, in connection with reports received here of extreme activity in pig iron in the West.

The Baltimore & Ohio's allotment of 20,000 tons of standard rails has been placed, 3,000 tons with the Illinois Steel Company, 12,000 with the Carnegie Steel Company, 2,000 with the Bethlehem and 3,000 with the Pennsylvania Steel Company. The Pennsylvania Steel Company also has secured the Atlantic Coast Line's 3,500-ton order; the Chicago Great Western placed a 10,000-ton order with the Steel Corporation and the Burlington ordered 5,000 tons of open hearth rails from the Steel Corporation. The Lackawanna secured an order from the Alton for 1,000 tons, and one from the Manila Railroad for 5,000. Scattering orders are reported by the Steel Corporation for about 4,000 tons more; while the demand for light rails and for trolley track equipment continues heavy. One leading eastern maker of light rails has advanced his prices \$1 over prices quoted in Pittsburgh.

Inquiries for pig iron are heavy, though few purchases were reported during the week. The rapid advances of prices of all grades have tended to make buyers wary, and though the new quotations are being well upheld, there is a disposition on the part of melters to look for a weak spot in the market. Furnaces are still asking \$17 for No. 2 foundry, though it is said some is to be had at a shade under that figure. Malleable foundries are making inquiries for their requirements for the first half of 1910, but furnaces will not quote better than \$16, Buffalo. The Eastern furnace capacity has been increased by two stacks during the week. Oxford having blown in, and the Empire having started one of the Crane furnaces. Several other furnaces will probably blow in before the close of the month.

The price of 50 per cent ferro-silicon, Philadelphia delivery, has increased to \$66, the advance representing only the increase due to the new tariff. No business is reported at the new figure. Eighty per cent ferro manganese, which underwent a reduction of \$1.50 a ton in duty, is quoted at \$41 to \$42 in lots running larger than a carload, deliveries on some contracts running into next year.

The combination of the steel mills in Eastern Pennsylvania to buy their entire supplies through E. Dreifus & Company, of Philadelphia, as purchasing agents, bids fair to cause some complications in the market. The scheme is to be tried as an experiment. Steel mills

in Eastern Pennsylvania consumes 3,000 to 4,000 tons a day, and some of those outside the agreement predict freely that Dreifus & Company will not be able to deliver the goods. It is said some of the yards and dealers are holding their scrap at almost prohibitive prices, in an effort to break the combination.

The volume of new work in structural materials during the week just ended has not been up to the record of the previous weeks of the summer. Part of this, however, is caused by the fear that the rolling mills, which are greatly behind in their deliveries, will hold up projected new work to an unusual extent. Railroad orders for bridge work have increased this demand for structural shapes, and it seems likely that the mills will be pushed strongly during the remainder of the season. The American Bridge Company's output was 40,000 tons in July. It promises to exceed 45,000 tons in August, and a rate of 50,000 tons a month probably will be maintained for the remainder of the year. The award on the New York, Westchester & Boston's steel work, about 22,000 tons, is expected within a few days. Specifications are out for the new St. Louis bridge, on which the substructure contracts were let a week ago. It will require about 1,500 tons of steel. The American Bridge Company's plants are operating about 80 per cent of capacity, and would increase this if it were possible to secure material faster.

Further Advance in Iron Looked for in Chicago.

CHICAGO—While the iron market was firm in tone all week, with few sales of any magnitude, local brokers are freely predicting further advances. It is in the semi-finished materials shops, however, that the week produced the greatest activity. Billets and bars are practically sold up, and the leading interest is definitely out of the market for early deliveries. There is said to be but little open capacity for Bessemer rails prior to January 1, while the demand for structural shapes has absolutely outgrown the capacities of the Western mills.

The Illinois Steel Company has booked orders this year for 40,000 tons of tie plates, and there is an inquiry in the market now for 15,000 tons more. The new billet mill at Gary will likely begin rolling 4x4 billets by August 15. In steel bars the Illinois Steel Company booked in one week 13,000 tons in new orders, and the independent mills are running eight to nine weeks behind on deliveries.

There was considerable orders for pipe during the week. An award of 2,000 tons was made by the city of Cleveland to the

United States Cast Iron Pipe & Foundry Company. Smaller transactions increased this figure considerably, while the additional car orders placed during the week with the American Car & Foundry Company, and the Pullman Company have further increased the prospects for a remarkable autumn for the makers of plates and car parts.

The present activities in the foundries lead to the belief that present contracts for fourth quarter iron will not be sufficient to run the makers of finished materials through to January 1, and supplemental inquiries are expected. Chicago brokers firmly expect a further increase in prices on nearly all grades of iron. Furnace interests, both north and south, are refusing to quote on inquiries for large lots for delivery after the first of the new year. Northern iron is generally held at \$17, furnace, but the \$16.50 price has not been finally withdrawn by all sellers. Some slight advances already are recorded. For instance, a sale of 10,000 tons to a machinery interest at \$17.50, Milwaukee, was followed a few days later by the sale of a smaller tonnage to the same concern at \$17.65. One Northern interest has temporarily withdrawn from the market.

There are indications that some of the fabricating shops will advance their prices, as a result of the increasing demand for structural work and the occasional offerings of premiums for rush contracts. Several large contracts are pending. The Pullman shop extensions will require over 9,000 tons, instead of about 7,000, as was expected. The Kerner building, 21 stories, will require 2,800 tons. The Harris Savings & Trust Company's new two-million-dollar 22-story building will require about 3,000 tons. An extraordinary type of safety deposit vaults is being designed for its basement.

The entrance of the Pullman Company into the scrap iron market, with large inquiries for old rails, angles and splice bars, has tightened the market in old materials to a considerable extent. The Pullman Company's mill has been started, opening up another avenue for the consumption of scrap. Prices are a shade higher, and many dealers are holding to their stocks, in the hopes of still further profits.

Southern Quotations Tipped for Another Rise

BIRMINGHAM.—Pig iron is restless at \$13.50 per ton for No. 2 foundry, and it is believed that the minimum price will be \$14 by the end of another week. Most of the furnace companies have sold about all they can make during the present year, and there is no disposition to fix a price for 1910 delivery. Inquiries for delivery during

the first quarter of the coming year are numerous. The impression is strong that the upward tendency of the market will continue indefinitely, and, with plenty of orders on hand at prevailing prices, the makers are willing as a rule to await developments before entering into any contracts for the sale of the output for the first quarter of the new year.

Three additional furnaces have been put in blast this month, and the furnace companies are making arrangements to care for the increasing business. A large amount of iron sold in the spring and early summer for delivery during the last quarter of the year is now being moved, the buyers finding that their needs have multiplied so that they cannot wait until the fixed time for delivery. Under the impulse of this movement stocks on the furnace yards are being reduced rapidly. Thus far, however, none of the furnace companies are found wanting in the matter of making prompt deliveries.

August is expected to prove a banner month in the matter of output. The indications are that the total production will exceed that of any one month during the past two years. Business has improved greatly with local foundry and machine shops of late.

The Tennessee Coal, Iron & Railroad Company has closed options upon an immense tract of land between Bessemer and Ensley, the purchase price running into the millions, and it is understood that plans of great importance are maturing in the office of the company. It is reported that a part of this property, which extends through a valley, will be used for the purpose of establishing a reservoir and waterworks system which will supply all the Ensley plants as well as the Universal mill, which is understood to be included in the plans of improvement. The company is also said to be preparing to sink another coal shaft near Ensley.

Prices are Firmer At Cincinnati.

CINCINNATI.—Inquiries for foundry iron for next year's deliveries find no furnace interests ready to quote prices that far ahead. There has been a good market during the week, with Southern iron pretty firmly established at \$13, Birmingham. One strong Southern furnace interest notified the local market that its price would be \$13.50, Birmingham, for delivery any time the balance of this year. Several of the smaller interests have quoted iron for 1909 delivery at this price, but so far as can be learned there have been no sales at the higher figure.

An inquiry from St. Louis territory for 5,000 tons of Northern basic, for delivery beginning in November, is under

consideration. Stocks are being rapidly reduced by Northern furnaces, and several additional stacks will be blown in within the close of the month. Quotations on Northern foundry are still \$15, Ironton for No. 2 for the remainder of the present year, while \$15.50 is asked on inquiries for 1910 deliveries.

There have been efforts to advance prices on old material from 50 cents to \$1, though this advance is not confirmed by all local dealers.

Rogers, Brown & Company, in their special report for the Industrial World, say:

Pig iron is active and much stronger. Recent developments have all tended toward higher values and now there is better feeling in the trade than for many months past. Several records have been broken, and during July, production was at the rate of 25,000,000 tons a year. This is the first time since October, 1907, that the monthly output has run as high as 2,000,000 tons. Stocks of pig iron generally are low, and where there is a stock on hand it is being steadily decreased.

In this territory basic and special irons are very strong. Foundry grades holding well and the entire list of foundry and forge irons being stronger or advanced since our last report. Furnaces continue to withdraw from the market, or when they again come in with selling authority, it is at higher figures. There are several that are still refusing to offer any iron for this or next year's delivery at the present time and are not willing to make prices when the business is put up to them. Inquiries for first quarter and first half of next year are frequent, but most producers still refuse to entertain them, feeling that higher figures will be ruling when such time becomes more or less of a spot period.

With final adjustment of the tariff question, the excellent crop reports and the farmers' prosperity for this season, large buying of cars and railway equipment, and the demands being made upon structural steel manufacturers, there can be but one direction for the iron world to travel. It seems to have started well on this path and it is hoped a steady and continuous progressive movement will be the result.

As an evidence of the railroads' effort to care for their part in the improvement, it is stated that during the first half of this year there were orders for about 75,000 cars placed with manufacturers.

All of the activity and advance that is evident on the first day of August, the reduction in stocks, the increased consumption and larger movement of pig iron and coke during July, took place in the face of an increase of some 20 furnaces in blast over the number in action the first of July. It is pretty safe to assume, therefore, that consumption, which is the main thing, is proceeding at a great rate.

Coke has at last felt the impetus and is much improved, with stronger feeling, and, while there has been no general advance, one or two interests are holding for higher figures, or when willing to quote for a longer period ahead than has been their habit recently, only do so at a sharp advance. The output of coke in all districts is increasing and shipments are at a greater per cent increase than manufacture, proving that melt is

coming along well. There is an effort being made to put more ovens in blast and increase the production, but it is being hampered by lack of labor.

Another Shortage Coming in the East.

PHILADELPHIA — With furnaces sold up to their capacity for the present quarter, consumers of both crude and finished materials are increasing their consumption steadily, so that it will not be surprising if Eastern Pennsylvania is compelled to make an additional cell on the Western furnaces for iron at about the mid-autumn period.

Sales reported during the week just passed were small, for present needs are pretty well cared for, and the furnace interests are practically refusing to quote prices for deliveries into next year. Numbers of buyers, however, find that they have underestimated their requirements in basic for the fourth quarter of the present year, and are promising to be on the market within a few days. It seems hardly likely that any basic will be available even for this year's delivery at \$17, at after this week. One sale of several thousand tons was reported during the week just ended at \$17.50. Prices vary, according to conditions. Two moderate tonnages of Virginia basic were placed at \$17.25. On foundry grades, several sellers are out of the market for extended delivery, refusing to quote further than October 1. Standard brands of No. 2X foundry command \$17 to \$17.50 delivered, with occasional sales at a slightly higher level, several interests asking 25 to 50 cents more for fourth quarter delivery. Prices of forge iron have moved up about 25 cents, and even at the higher level this grade is scarce. Standard brands command \$16 to \$16.25, delivered.

* Reports of a weaker tone in foundry and basic iron as a result of the reduction in tariff from \$4 to \$2.50, are not confirmed by well posted men in the local market. The passage of the tariff had no effect on any phase of the local market, except, of course, to settle the uncertainty.

The joint buying agreement entered into by local steel consumers by which they are to take all their scrap through E. Dreifus & Company, has caused considerable of a flurry in the local scrap market. Smaller dealers are holding their scrap at almost prohibitive prices, in the hopes of breaking the combination. The interested concerns in the new arrangement with Dreifus & Company are understood to be: Worth Brothers Company, Lukens Iron & Steel Company, Alan Wood Iron & Steel Company, Bethlehem Steel Company, Pennsylvania Steel Company, Phoenix Iron Company, and John A. Roeblings Sons Company. The result of the pub-

licity given the deal has been to advance prices on scrap, and to make quotations vary greatly.

Quotations on ferromanganese are very uncertain as a result of the tariff change. Ferro-silicon is up to the greater extent of the added duty, which figures out about \$9 to \$10 a ton.

COKE PRODUCTION.

The H. C. Frick Coke Company is prepared to operate all its ovens, if the labor could be had, but labor throughout the coke regions is still very scarce. Many independent ovens were idle during the week because of the scarcity of workmen. Of the independents, 5,699 ovens operated six days, 252 five days and 56 four days. With the exception of one plant, the Rainey ovens ran six days.

Promoters of the new coke merger are still working indefatigably, and the managers have reached a basis of agreement with practically all the operators.

According to the "Courier's" tables, out of 38,476 ovens in the Connellsville district, 30,542 were in blast and 7,935 were idle during the week ending August 7, a gain of 170 ovens over the previous week. The total production was 395,664 tons, compared with 385,817 tons the previous week.

Prices continue discouragingly low. Furnace is being quoted at \$1.75, while there are reports that it is being sold down to \$1.50 on contracts for the finish of the year. Foundry maintains its price better and is being quoted at \$2 and \$2.50.

THE TARIFF AND FERRO-SILICON

Ferromanganese responded to the tariff reduction from \$4 to \$2.50, last week, by making up fully a dollar of the loss. It is quotable firm at \$4.11 Baltimore, for early shipment, against \$4.15 before the change. This is just what would be expected. The market just before the passage of the bill had practically discounted the change.

Fifty per cent ferrosilicon sold during the week at \$63.50 Pittsburgh, or only a little higher than before the change in the duty. That change was from \$4 a ton to 20 per cent ad valorem, involving therefore a large advance.

Ferrosilicon containing not over 15 per cent silicon, i. e., ferrosilicon made in a blast furnace, is advanced from \$4 to \$5 a ton in the duty. The regular market was quoted in Pittsburgh at \$25 for 10 per cent, \$26 for 11 per cent, and \$27 for 12 per cent. These prices are slightly higher than those of a fortnight ago, but the market was advancing anyhow.

The effect of the reduction in the scrap duty from \$4 to \$1 a ton is being canvassed with some interest. The Ca-

nadian market is naturally to be drawn from, but the Canadian tonnage is small relative to the tonnages handled in the United States, and it is reasonable to expect that our market will swing the Canadian market, rather than the reverse.

PROMISES TO REVOLUTIONIZE THE MAKING OF BRICK.

It is now claimed the brick making industry of this country will be revolutionized. A secret chemical process for extending the life and service of an ordinary fire brick under extreme degrees of heat and friction 100 per cent and over has just been demonstrated by local tests. A charter has been secured by the Refractory Fire Brick Company. A coal and fire clay property has been purchased near Connellsville, and the first plant will be erected there. Later it is probable that a plant will be established at Washington and at other points throughout the country.

The Refractory company controls the exclusive use in this and several adjoining States of the above mentioned process. Tests have been made in Ohio, West Virginia and at other places and are now being made in Washington, Pittsburgh and elsewhere. The result of the tests made so far show that an ordinary fire brick treated with this process will stand at least 4,000 degrees of heat. Successful tests have been made in revolving cement kilns, cupolas, furnaces, etc. The process can be applied to any fire brick after they are made.

The secret process which is represented by former Judge J. L. White, of New York city, is controlled in the territory above mentioned by the company. Mr. White has been in Washington for several weeks, making the preliminary arrangements for incorporating this company and putting in the tests. The process has been tried out by the German government and approved by its experts.

The company's property near Connellsville is located upon the railroad and consists of 72 acres underlaid with a fine vein of flint fire clay. It is the plant of the company to erect thereon an up-to-date plant with a daily capacity of 25,000 fire brick and other clay specialties which are subject to extreme degrees of heat.

MOVING RAILWAY.

George S. Baton, constructing engineer, Pittsburgh, was receiving estimates August 12, for changing the alignment of 1½ miles of the main line of the Monongahela railroad track to make room for improvements to be made to the plant of the Isabella-Connellsville Coke Company.

Range of Weekly Quotations of Pig Iron

PIG IRON

At Pittsburgh—	Aug. 14.	Aug. 7.	July 31.	July 24	July 17.	July 12	July 5.
Bessemer	16.90	16.90	16.40@16.90	16.40@16.90	16.40	16.15@16.40	16.40@16.65
Basic	16.15@16.40	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15
No. 1 Foundry	16.90@17.15	16.90@17.15	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65
No. 2 Foundry	16.15@16.65	16.40@16.65	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15
Malleable Bessemer	16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	16.15@16.40
Gray Forge	15.15@15.65	15.40@16.15	14.90	14.90	14.90	14.65@14.90	14.90@15.15
Low Phosphorus	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90
Ferro Silicon, 50 per cent	63.50@65.00	67.00@68.00	67.00@68.00	62.00@63.00	62.00@63.00	63.00@64.00	63.00@64.00
Ferro Silicon, 10 per cent	24.00@25.00	23.50@24.50	23.50@24.50	24.00	24.00	24.00	24.00
Silicon Spiegel, 10 to 12 per cent ..	25.00@27.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00
Spiegeleisen	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00
Ferro Manganese	42.95@43.95	43.45@43.95	43.45@43.95	43.45@43.95	43.45@43.95	42.95@43.95	42.95@43.95
At Virginia Furnaces—							
Basic	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00
No. 1 X	14.50@15.00	14.50@15.00	14.50@15.00	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50
No. 2 X	14.00@14.50	14.00@14.50	14.00@14.50	14.00	14.00	13.75@14.00	13.75@14.00
No. 2 Plain	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75
Gray Forge	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00
At Birmingham—							
No. 1, Foundry	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50
No. 2, Soft	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00
No. 2, Foundry	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00
No. 3, Foundry	12.00@12.50	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.00@11.50
No. 4, Foundry	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	10.50@11.00
Gray Forge	11.25@11.75	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.50@10.75
At Philadelphia—							
No. 2X Foundry	17.00@17.50	16.50@17.00	16.50@17.00	16.00@16.50	16.00@16.50	16.50@16.75	16.50@16.75
Basic	17.00@17.50	15.50@15.75	15.50@15.75	15.50@15.75	15.50	15.50	15.50
Gray Forge	16.00@16.50	15.25	15.25	15.25	15.25@15.50	15.25@15.50	15.25@15.50

STEEL.

[illegible]

FINISHED PRODUCTS.

Tons of 2,000 lbs., at Pittsburgh-								
Skelp Steel Grooved	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00
Skelp Steel Sheared	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00
Railroad Spikes	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00
Sheets, No. 28	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
Galvanized Sheets, No. 28	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Beams, 3 to 15 inches	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00
Beams, over 15 inches	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00
Channels, 3 to 15 inches	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00
Channels, over 15 inches	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00
Tees, 3-inch and larger	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00
Zees, 3-inch and larger	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00
Angles, 3 to 6 inches	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00
Angles, over 6 inches	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00
Tank Plate	28.00@30.00	28.00@30.00	27.00@28.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00
Boiler Plate	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00
Hoops	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@30.00
Bands	24.00	24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	24.00
Bessemer Steel Bars	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00
Open Hearth Steel Bars	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00
Common Iron Bars	29.00	29.00	29.00	29.00	29.00	29.00	28.00@29.00	29.00

26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	25.00@26.00	24.00@25.00	25.00@26.00	29.00@30.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	26.00@27.00	27.00@28.00	30.00@32.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	33.00@34.00	33.00@34.00	33.00@34.00	33.00@34.00	34.00@36.00
44.00	44.00	44.00	44.00	44.00	45.00	45.00	45.00	45.00	50.00
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	71.00
26.00	26.00	26.00	26.00	26.00	26.00	26.00	25.00@26.00	25.00@26.00	32.00
28.00	28.00	28.00	28.00	28.00	28.00	28.00	27.00@28.00	27.00@28.00	34.00
26.00	26.00	26.00	26.00	26.00	26.00	26.00	25.00@26.00	25.00@26.00	32.00
28.00	28.00	28.00	28.00	28.00	28.00	28.00	27.00@28.00	27.00@28.00	34.00
27.00	27.00	27.00	27.00	27.00	27.00	27.00	26.00	26.00	33.00
27.00	27.00	27.00	27.00	27.00	27.00	27.00	26.00	26.00	32.00
26.00	26.00	26.00	26.00	26.00	26.00	26.00	25.00@26.00	25.00@26.00	32.00
28.00	28.00	28.00	28.00	28.00	28.00	28.00	27.00@28.00	27.00@28.00	34.00
25.00@26.00	25.00@26.00	26.00	26.00	26.00	26.00	26.00	25.00@26.00	25.00@26.00	32.00
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	36.00
24.00	24.00	24.00	24.00	24.00	24.00	24.00	23.00@24.00	23.00@24.00	28.00
24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00	24.00	23.00@24.00	23.00@24.00	28.00
24.00@25.00	24.00@25.00	24.00@25.00	24.00	24.00	24.00	24.00	23.00@24.00	23.00@24.00	28.00
29.00	29.00	26.00@27.00	26.00@27.00	27.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	28.00

STEEL PLATES.

Base prices, tank quality, ¼-in. thick, per 100 lbs., f. o. b., Pittsburgh:
6¼ to 100 inches wide\$1.30

Extras over base price—	
3-16 inch thick .....	.10
Gauges 7 and 8 .....	.15
Gauge 9 .....	.25
Gauges 10 and 11 .....	.25
Circles .....	.20
Sketches .....	.10
Boiler and Flange quality .....	.10
Marine Steel .....	.40
Widths over 100, to 110 in .....	.05
Widths over 110, to 115 in .....	.10
Widths over 115, to 120 in .....	.15
Widths over 120, to 125 in .....	.25
Widths over 125, to 130 in .....	.50
Widths over 130 in	1.00

IRON AND STEEL SCRAP.

Old steel rails, re-rolling..	\$16.50	\$17.00
Old steel rails, remelting..	16.00	16.50
Steel axles	20.00	20.50
Heavy melting scrap	16.00	16.50
Low phosphorus	19.50	20.50
Sheet scrap	14.50	14.75
No. 1 wrought scrap	16.50	16.75
Machine shop turnings ...	11.75	12.00
Cast borings	9.50	10.00
No. 1 cast	15.25	15.75
Old car wheels	16.00	16.50
Old iron rails	18.25	18.75
Axle turnings	13.50	14.75
Railway malleable	14.75	15.00

TIN AND TERNE PLATES.

Official prices, f. o. b., Pittsburgh—
Coke tins:

14x20, I. C.	\$3.55
14x20, 100 lbs.	3.40
14x20, 95 lbs.	3.35
14x20, 90 lbs.	3.30

Charcoal tins:

A Grade, 14x20, I. C.	4.15
A Grade, 14x20, 100 lbs.	4.00

Ternes:

20x28, I. C.	6.80
20x28, 200 lbs.	6.50

STEEL RAILS.

Fifty pounds and Heavier—

500-ton lots and over	\$28.00
Car load lots	30.00
Less than car load lots	32.00

Light Rails—

12 and 14 pounds	\$30.00
16, 20 and 25 pounds	28.00
30 and 35 pounds	28.00
40 and 45 pounds	28.00

Relaying Rails

Subject to inspection, f. o. b. Pitts-	
burgh:	
Stand'd 50 lbs. & heavier..	\$22.00 \$22.50
25 to 40 lbs.	23.00 23.50
16 to 20-pound rails	24.00 24.50
12-pound rails	25.00 26.00

STEEL SHEETS.

Official prices, per 100 lbs., f. o. b., Pittsburgh—
Guage.

	Black.	Galv.
30	\$2.35	\$3.60
29	2.25	2.35
28	2.20	3.25
27	2.15	3.05
25-26	2.10	2.85
22-24	2.05	2.65
17-21	2.00	2.50
15-16	1.95	2.40
13-14	1.90	2.30

Blue Annealed.

10 and heavier	\$1.65
11-12	1.70
13-14	1.75
15-16	1.85

Corrugated Roofing.

Per square, 28 gauge, f. o. b. Pitts-	
burgh—	
Painted	\$1.55
Galvanized	2.80

WIRE AND NAILS.

Prices to jobbers in car load lots, per 100 lbs.; retailers 5 cents additional:

Wire nails	\$1.80
Plain wire	1.60
Painted barb wire	1.80
Galvanized wire	2.10

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per cent pure are held at 24c per pound in ton lots.

For small lots of 100 pounds and over advances of 3c per pound are charged.

Rods and wire.....	base price 32 cents
Sheets	base price 34 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

	Per Ton.
Mine-run	\$1.10@1.20
¾-inch lump	1.20@1.30
1¼-inch lump	1.30@1.40
3-inch lump	1.55@1.65
1¼-inch nut	1.10@1.20
¾-inch slack .....	.55@.65

At Buffalo—

	Pgh.	Frep't
Mine-run	\$2.35	2.05
¾-inch lump	2.45	2.15
1¼-inch lump	2.55	2.25
¾-inch slack	1.85	1.70

At Cleveland—

	Pgh.	No. 8
Mine-run	\$2.10	\$1.80
¾-inch lump	2.20	1.90
1¼-inch lump	2.25	2.00
1¼-inch nut	2.10	1.80
¾-inch slack	1.55	1.45

At Detroit—

Mine-run	\$2.50	\$2.05
¾-inch lump	2.60	2.15
1¼-inch lump	2.70	2.25
1¼-inch nut	2.50	2.05
¾-inch slack	2.00	1.65

At Chicago—

Mine-run	\$3.00	\$2.55
¾-inch lump	3.10	2.65
1¼-inch lump	3.20	2.75
1¼-inch nut	3.00	2.55
¾-inch slack	2.45	2.25

MERCHANT PIPE.

Base discounts, car load lots, subject to one point and 5 per cent extra to large jobbers.

Steel	
Black.	Galv.
½ and ¾-inch .....	.72 56
¾-inch .....	.73 56
½-inch .....	.76 64
¾ to 6-inch .....	.80 70
7 to 12-inch .....	.75 60
Extra strong plain ends—	
½ to ¾-inch .....	.65 53
½ to 4-inch .....	.72 60
4½ to 8-inch .....	.68 56
Double extra strong—	
½ to 8-inch .....	.61 50

WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe car load prices to consumers; prices to jobbers one point and 5 per cent.

¼-inch .....	.69 ..
½ and ¾-inch .....	.70 56
½-inch .....	.73 61
¾ to 6-inch .....	.77 67
7 to 12-inch .....	.72 57

Extra Strong and Plain Ends—

½, ¾ and ¾-inch .....	.62 50
½ to 4-inch inclusive .....	.69 57
4½ to 8-inch, inclusive65 53

Double Extra Heavy plain Ends—

½ to 8-inch, inclusive58 47
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BOILER TUBES.

	Steel	Iron.
1 to 1½ inches50	45
1¾ to 2¼ inches62	45
2½ inches64	50
3¾ to 5 inches .....	.70	57
6 to 13 inches .....	.62	45

Less than car load lots, two points less.

2½ inches and smaller, over 18 feet, 10 per cent, net extra.

2¾ inches and larger, over 22 feet, 10 per cent net extra.

MERCHANT STEEL.

Cold rolled and ground shafting, 60 per cent off, car load lots; 56 per cent off less than car load lots; delivered in base territory:

Planished Tire Steel	\$1.40@1.50
Iron finish, up to 1½x½ in. ..	1.35@1.45
Iron finish, 1½x½ in. and over	1.20@1.30
Toe Calk Steel	1.70@1.80
Railway Spring Steel	1.75@1.85
Cutter Shoe	1.95@2.05
Flat Sleigh Shoe	1.55@1.65
Crucible Tool Steel	7.00@8.00
Open-Hearth Spring Steel ..	2.05@2.30

Freight Rates On Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig Iron, from Virginia furnaces to Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	\$2.35	\$3.60	\$3.20	\$2.35	\$3.30	\$3.35
Bristol		3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.35	3.60	3.20	3.00	3.95	4.00
Kayula, Ivanhoe, Rural Retreat ...	2.35	3.60	3.20	3.40	4.35	4.40
Pulaski, E. Radford, Max Meadows. 2.90	2.35	3.60	3.20	3.25	4.20	4.25

Pig Iron from Birmingham, Ala., tons of 2,240 lbs. to—	Cleveland ...	1.65
Boston, by water	Columbus	1.65
Chicago	Cincinnati	2.10
Cincinnati and Ohio River	Chicago	2.65
Cleveland	East St. Louis	2.80
Milwaukee and Northwest	Hamilton, Ont.	2.20
New York, all rail	Joilet	2.65
New York, rail and water	Louisville	2.65
Philadelphia, all rail	New York	2.85
Philadelphia, rail and water	Pittsburgh .....	.80
Pittsburgh	Philadelphia	2.15
St. Louis	Richmond, Va.	3.04
To Pittsburgh from—	Toledo	2.25
Dunbar Furnaces	Valley Furnaces	1.35
Kittanning Furnaces		
Scottdale Furnaces		
Valley Furnaces		
Wheeling		
Valley Furnaces to—		
Cleveland		

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	Billets.
Baltimore	\$2.15	\$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville .....	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va. ....	.90	1.00
Youngstown .....	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango Valleys ..	1.00	
Wheeling	1.00	

COKE.

From Connellsville region, per 2,000 pounds to—	
Boston	\$3.50
Buffalo	1.90
Baltimore	2.15

FINISHED PRODUCTS.

Finished Steel Products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire, nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—	
Albany .....	.16
Buffalo .....	.11
Boston .....	.18
Baltimore .....	.14½
Canandaigua .....	.13½
Cleveland .....	.10
Columbus .....	.12
Cincinnati .....	.15
Chicago .....	.18
Harrisburg .....	.14½
Louisville .....	.18
New York .....	.16
Norfolk .....	.20
Philadelphia .....	.15
Rochester .....	.11½
Richmond .....	.20
Scranton .....	.15
St. Louis .....	.23
Washington .....	.14½
To Pittsburgh from—	
Mahoning and Shenango Valleys..	.05
Wheeling .....	.05

COAL.

Coal Rates from Mines—	
To Ashtabula	\$1.00
To Allegheny, Pan'dle Ft. W. trk..	.43
To Allegheny, West Penn tracks..	.48
To Allegheny, B. & O. ....	.35
To Pittsburgh, P. R. R. Main Line..	.43
To Pittsburgh, B. & A. V. Div...	.48
To Pittsburgh, B. & O. ....	.33
To Valleys .....	.70
To Buffalo	1.25
To Cleveland	1.00
To Detroit	1.40
To Chicago	1.90
To New York, gross ton	2.25
To Philadelphia, gross ton	2.00

From Freeport—	
To Buffalo	1.10
For Lake Shipments— Cargo. Fuel.	
To Ashtabula .....	.88 .98
To Cleveland .....	.88 .98
To Erie .....	.88 .98

West Virginia rates from mines—	
To Chicago	1.90
To seaboard points, gross ton	1.80

From No. 8, of Ohio—	
To Cleveland .....	.90
To Chicago	1.65
To Detroit	1.15

Railroad Affairs Displayed for Manufacturers and Shippers

MYSTERY IN NEW SURVEY.

Engineers employed by the J. B. Carter Construction Company are at work just west of Pittsburgh on surveys for a new railroad through Ohio. There appears to be considerable mystery regarding the proposed road and representatives of existing lines have sent out agents to determine who is backing the new project. William Kenefick and J. B. Carter have built several roads in Western Pennsylvania and Ohio, which have turned over to other companies and used as extensions to former railroads.

All property is to be purchased by the construction company, it is understood, and will be transferred to the real backers when all surveys have been made and actual construction started. One report has it that the Jones & Laughlin Steel Company eventually will purchase the new line and that it will be used as an extension of the Aliquippa Southern and the Monongahela Connecting. From another source it is intimated that the United States Steel Corporation has given the construction company authority to build the line.

It is pointed out that another line could be used to good advantage by the Steel Corporation on account of the immense tonnage handled by the Bessemer & Lake Erie. At present the latter touches only one point along the lakes where large quantities of ore can be handled.

The Carter Construction Company made surveys for the Lake Erie & Pittsburgh, which is being built jointly by Pennsylvania and the Pittsburgh & Lake Erie at a cost of approximately \$5,000,000.

TEST TITANIUM RAILS.

On October 7, 1908, the Baltimore & Ohio R. R. placed in service on Kessler's Curve, Cumberland Division, 17 rails treated with titanium alloy. The rails were placed on both the high and low sides of a nine degree curve which is in almost constant use under heavy traffic.

The test was made at the solicitation of the Titanium Alloy Manufacturing Company, of Niagara Falls. The company is now sending out photographs and drawings on the results of the test. The company's circular says:

"All of the 17 titanium rails are in excellent condition and when sufficiently worn down on the one side may be turned and used again. The standard Bessemer rails put in service at the same time and place, are now worn out and about to be removed. The diagrams

were obtained directly from the rails by R. W. Hunt & Company, engineers, New York and Chicago, and are vouched for by them.

"The loss by wear from the Bessemer rails, in pounds per yard, was 294 per cent greater than from the titanium rails, while the condition of the latter promises an even greater length of life than is indicated by these remarkable figures."

PENNSY'S ELECTRIC ENGINES.

The first electric engine ever built at the Juniata shops for the Pennsylvania Railroad Company was taken to the East Pittsburgh plant of the Westinghouse Electric & Manufacturing August 10 and will be fitted with the electrical apparatus. The second engine will be turned out of the Juniata shops within a week and brought to East Pittsburgh. It is expected the first engine's mechanism will be ready for the test by September 1. For the present the new electric engines will be used exclusively on the eastern divisions and later electricity will be used for operating all the local passenger trains in Pittsburgh and at all the more important terminals.

PENNSY OFFICE BUILDING.

Unofficial announcement was made during the past week of a plan for two additional buildings at the Pennsylvania terminals in Pittsburgh. One will be an office building, to house officials of the Lines West, at Liberty avenue and Eleventh street, opposite Union Station. It will be eight to 11 stories. The other structure planned is a steel and concrete warehouse, with vaults and storage rooms, to occupy a city block. The Pennsylvania owns abundant property in the vicinity of Union Station for sites. The office floors in the Union Station structure have been too small for the needs of the company ever since they occupied the building.

FOR A NEW BRIDGE.

Overtures have been made to the Beaver County (Pa.) Commissioners by the Pittsburgh, Harmony, Butler & New Castle Railway Company for the construction of a new bridge over the Beaver River, near Koppel. It is understood that in the event of the building of the bridge the traction company will build a branch line from Ellwood City to Morado, passing through Koppel, thus connecting the Beaver Valley with New Castle, Youngstown, Butler and Pittsburgh.

KANAWHA TRACTION PLANS.

Charleston, W. Va., capitalists have taken up the matter of a traction line from that city to Point Pleasant, at the mouth of the Great Kanawha, 54 miles distant. The line would skirt the north side of the river, alongside the Kanawha & Michigan Railroad. A good deal of work had been done in an organizing way—surveys made, plats and profiles drafted and filed—before the public knew anything about the project. The men chiefly interested at present are F. W. Abney, George S. Couch and Fred Paul Grosscup. It is understood that they have already enlisted outside capitalists. The proposed line will run through an excellent farming country. Three large mining operations lie along the route—Raymond City, Plymouth and Black Betsy.

The plan comprehends also the building of a line up the Kanawha 26 miles to the town of Montgomery, making a road 80 miles long, all told.

START ON THE MIDLAND.

Projectors of the proposed Midland Continental Railway, which, it is asserted, is to be constructed from Winnipeg to the Gulf of Mexico, have announced that the contracts have been awarded for the construction of the first section of the line, 50 miles long, between Edgeley, N. D., and Jamestown. It is also alleged that the right of way has been obtained from Edgeley to Pembina, N. D., a distance of 212 miles.

The president of the road is Frank K. Bull, who is also president of the J. I. Case Threshing Machine Company. George M. Wisner, chief engineer of the Chicago sanitary district, is chief engineer of the road. Among the stockholders the following are given: John Cudahy, F. S. Peabody, president of the Peabody Coal Company; F. L. Roenitz, vice president of the American Hide & Leather Company; Robert Pringle, of the Chicago Board of Trade; Orson Wells, capitalist, and J. W. Lyden, president of the Great Lakes Dredging Company.

McKEEN MOTOR CARS.

The McKeen Motor Car Company has recently moved into new shops of increased capacity, at Omaha, Neb. Commodious offices are fitted up over the car shops part of the plant. The engines are made in the old blacksmith shop of the Union Pacific plant in that city. Several experimental motor cars from the company's shops are being tried out on Western roads.

TO CHANGE MOTIVE POWER.

For the accommodation of its suburban business out of Pittsburgh, the Pittsburgh & Lake Erie Railroad is said to be considering plans for changing the motive power of its suburban lines to Beaver, Pa. It is planned to have individual cars with a capacity of 80 passengers each, baggage and smoking compartments included. These will be operated by gasoline engines, which generate the electric power by which the cars will run.

The plan contemplates having at terminal points, such as Beaver and Coraopolis, overhead crossovers, so that a car from Pittsburgh upon arriving at its terminal will be run up from the out-bound track on to an elevated structure, cross the main line on a bridge and return without delay or switching.

J. B. Yohe, general manager of the road, said: "This scheme is entirely feasible for the carrying of the local traffic, but no defined steps have been taken, nor will it be possible to undertake this step until the completion of the four track system between Pittsburgh and Youngstown."

Forty-seven of the style of cars in contemplation are in service on various roads, the Southern Pacific having the largest number. These cars are almost entirely of steel construction and fire-proof and are the standard coach width, 10 feet 3½ inches. A maximum carrying capacity at a minimum expenditure of power is due to the combination of light weight and reduced air resistance by the tubular construction and wind splitting shape of the forward end. Trials have been made with these cars and a very considerable saving of power has been found.

THE HEAVY CONSTRUCTION BY NORTHERN.

No time is to be lost by the Canadian Pacific Railroad in bringing the new seaport of Alberni in direct touch with the world by railway connection. Tenders are invited for grading and bridging on the final section required to complete the Wellington-Alberni section of the trans-continental line, the 27 miles from Cameron Lake to Alberni, the heaviest work on the system, where the crossing is made of the mountain backbone of the island. On certain portions in the hills the work cannot be done for less than \$60,000 a mile.

Grading is so well under way that it may be said to be virtually completed on the first section of 100 miles from Wellington to French Creek, which stretch of roadbed is ready for the metals.

For the next eight miles, from French Creek to Cameron Lake the grading and

bridging contract has been let to Moore & Dixon. Bids for the last section are receivable from August 8 until September 6, and it is expected that the entire Alberni extension will be ready for traffic before Autumn, 1910.

C. B. & Q. CARS.

The specifications for the 3,000 box cars ordered by the Chicago, Burlington & Quincy, August 1, of the American Car & Foundry Company call for cars all-wood, 40-tons capacity, and weighing 35,800 pounds. The over-all measurements will be: Length, 43 feet 4½ inches; width, 9 feet 2¾ inches; height, 12 feet 11 11-16 inches, and the inside measurements are: Length, 40 feet 5½ inches; width, 8 feet 6½ inches; height, 8 feet. The 500 refrigerators ordered from the American Car & Foundry Company, mentioned last week, are to be all-wood, 30 tons capacity, and will weigh 46,000 pounds. The over-all measurements are: Length, 42 feet 7 inches; width, 9 feet 5¼ inches; height, 14 feet 2¾ inches, and inside, length, 39 feet; width, 8 feet 3½ inches; height, 7 feet 5¾ inches. The 500 50-ton all-steel gondolas ordered by the road from the Pressed Steel Car Company are of the standard specifications.

ORDERING MOTIVE POWER.

The announcement was made August 7, of the receipt of a \$1,000,000 order for 57 locomotives at the Baldwin Locomotive Works, Philadelphia, from the Hill railroad lines, and while the capacity of the works is about that number a week the order will give employment to many machinists, boiler makers and others laid off during the recent depression. The order is the largest received at Baldwin's for more than a year, with the exception of an order for 105 from the Harriman lines recently.

At present 6,500 men are employed at the works. The maximum number employed was 17,000 before the depression. Last summer only 4,500 were employed.

COMPARING RAIL SECTIONS.

Robert W. Hunt & Company, of Chicago, have recently compiled data in detail of the latest standard rail sections. Both the Type A and Type B sections of the American Railway Association are represented, but the standard sections of the American Society of Civil Engineers are absent—probably because they are so well known, and also because they are being superseded to some extent by these new sections. The compilation shows at a glance the characteristics of the diverse views on the best method of distribution of the metal.

NEW AUTOMATIC STOP.

Railroad operating experts continued the test, at Oil City, Pa., on August 10, of an automatic car stop, an appliance in which electricity and compressed air are combined, and intended to prevent the engineer of a train from going far, if he should, through accident or carelessness, pass a danger signal on a railroad block. The party included Bird M. Robinson, of New York, president of the Tennessee railroad. The Erie railroad furnished an engine for the test. The device is to be manufactured by the newly organized Railway Appliance Company, of Oil City.

TO DEVELOP OLD FIELD.

The West Point coal basin, in Columbiana county, O., 15 miles from the Pennsylvania State line, after long preliminary work, has been made accessible by the completion of a section of the new Youngstown & Ohio River Railroad. The first shipments of coal to market were made late in July. Attempts have been made to open up this coal by railroad connection for 30 years, but owing to the peculiar topography of the country, railroad engineers shied at the proposition.

PROTECTION AGAINST CORROSION.

A method of protecting metals against corrosion by sheradizing, a dry galvanizing process, is being carried out by the United States Sheradizing Company, New Castle, Pa. Articles to be sheradized are cleaned and then placed in air tight drums and packed with ordinary zinc dust of commerce. The drums are then placed in an oven, heated to a certain temperature, allowed to remain for a few hours and then taken out and allowed to cool.

This process is claimed to be exceedingly durable, as the first deposit is said to form an alloy which is highly rust resisting. The printed matter explains that small screws may be sheradized without the threads being filled up and steel rules may be treated without marring the graduations in the least. The company controls the patent rights, which it leases at a nominal royalty, and advises of contracts for plants recently closed with the General Electric Company, Schenectady, N. Y., and the American Tube & Stamping Company, Bridgeport, Conn., as well as the fact that the National Metal Molding Company, Pittsburgh, Pa., has a large contract for sheradized conduit pipe for the new Northwestern Depot in Chicago.

The New American Stoker, "Class E."

The American Stoker Company, of New York, has placed its latest model of the underfeed stoker before the public. The company is pleased with the results obtained from this stoker and exhibit the utmost confidence in the apparatus, as well as great satisfaction as to its performances. Unlike most improvements, the stoker has more than mere theory back of it, having been thoroughly tested through a number of installations which have been made and carefully watched, in order to determine the detailed efficiency of the stoker under working conditions, among which may be named the United States government, the British war office, the British admiralty, government of Japan, and London county council. The result was so satisfactory to the stoker company that it has been listed as the "Class E" stoker in the forthcoming catalog. "E" being the first letter of the words "Excellent," "Efficient" and "Economical," and the word "Class" signifying that the stoker is in a class entirely by itself.

The stoker is simple in design, and firm of construction, special care being taken to see that no working part is brought within the zone of fire, and that the mechanical arrangement be as simple as possible, not only to assure a stoker

plest stoker yet invented, but the officers of the company make no special claims for simplicity, calling attention instead to its efficiency.

The general scheme of the stoker may be briefly said to be an oscillating bottom principal, the feeding trough being in constant motion, gradually feeding coal to the fire above. The design is such that while the coal is never al-

stantly in motion toward the dumping trays which receive the ashes and deliver to the ash pit by the operation of a simple lever outside the furnace door. The use of a slice bar and frequent cleaning of fires is by this means eliminated and smoke prevention assured.

The furnace doors, grate bars, etc., are air cooled, the air on the other hand being heated before its introduction to the combustion chamber. Each alternate grate bar being hollow has a current of air constantly passing through it to the coal trough at which point it

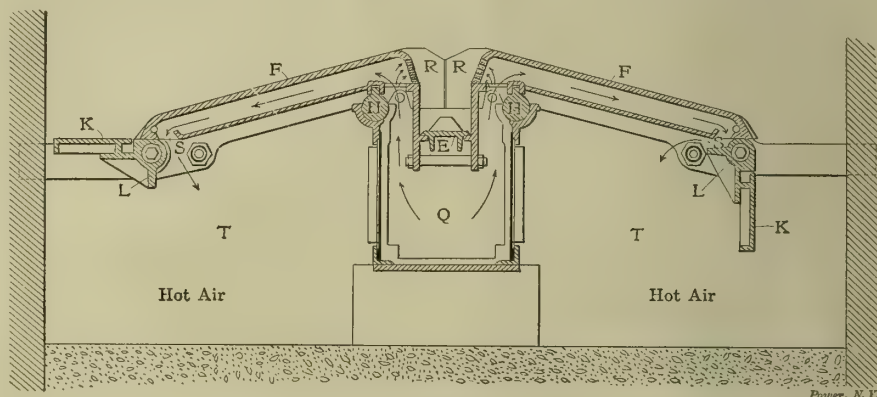


Plate 2.

lowed to settle in this trough, it is still not allowed to be driven, (even in cases of overloading) in chunks or masses into the fire to smolder with resulting smoke and wasted energy. The literature of the company describes the

mixes with the gases, etc., while between each alternate bar a space is left through which air is forced from the ash pit below.

In this stoker the moving bars referred to are a novel feature, as is also the air cooling and air heating arrangement. The greatest care seems to have been exercised to bring out a "perfect stoker" or one as nearly perfect as possible.

A test sheet was exhibited showing that on coal of 10,400 B. t. u.'s showing over 10 per cent of ash an evaporation of nine pounds of water from and at 312 degrees, Fahrenheit, was obtained. This coal was practically useless as hand fired fuel, being a mine refuse. Another performance sheet was shown in which a coal of 10,816 B. t. u.'s with over 9 per cent of ash was made to produce an evaporation of 9.29 pounds of steam from and at 212 degrees, Fahrenheit. Attention is called especially to the poor quality of coal used in these tests which were the average for the plant at which stokers were installed. When it is considered that the approximate efficiency of coal of 14,500 B. t. u.'s is (in ordinary practice on flat grates) about 8 pounds of water to one pound of coal, the attractiveness of this method to any operator is readily apparent. Especially is this true when it is taken into consideration that the company claims to be able to evaporate as much water from the poorest slack coal as can ordinarily be obtained from coal costing 50 per cent more per ton than slack coal.

The company has also perfected a ma-

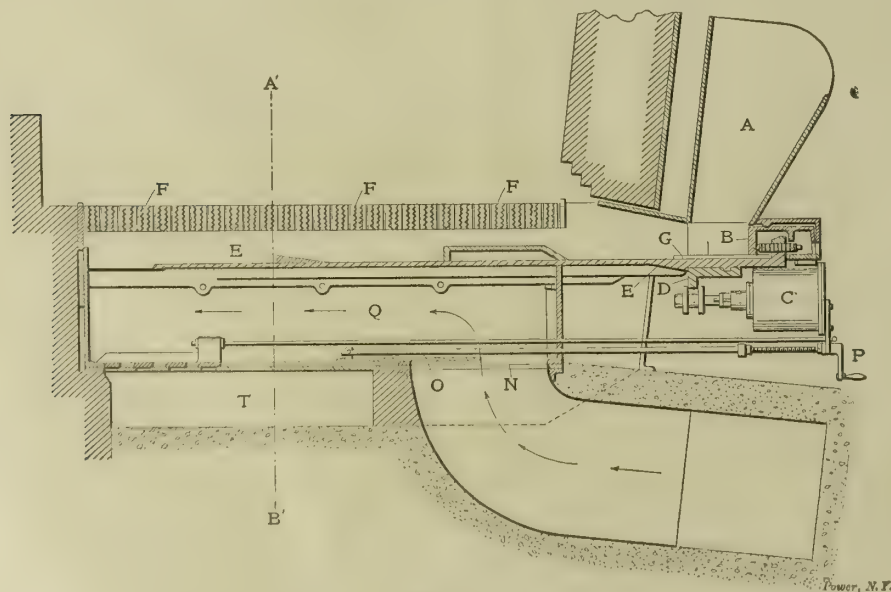


Plate 1.

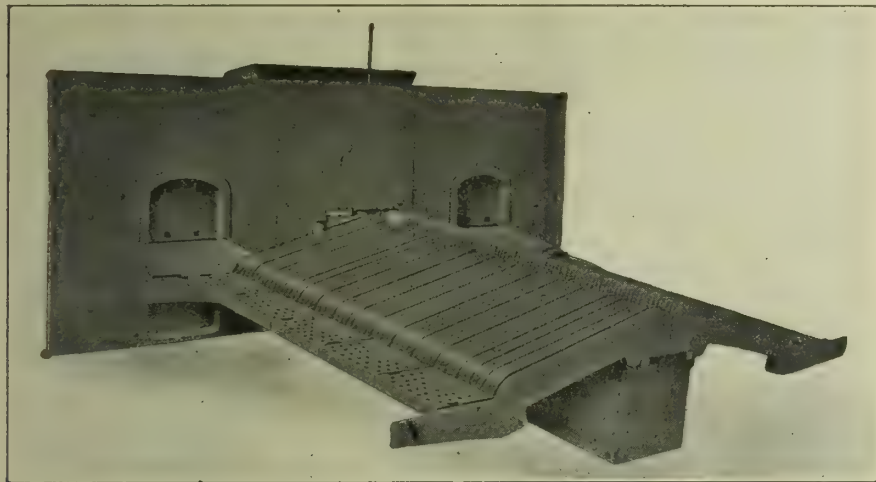
as nearly perfect and as near "fool proof" as possible, but also to bring cost of maintenance to a minimum. This feature of the stoker is of particular interest, and a simpler machine for the underfeeding of coal, which is after all, the ideal feed, could hardly be imagined, indeed, with the possible exception of the chain grate, it is probably the sim-

stoker as having a "reciprocating sliding bottom which runs the full length of the trough," and this description is the most accurate.

As the coal rises from the sliding bottom it is distributed to the sides of the furnace by moving grate bars which give the fire a breathing motion which keeps the coking and burning coals con-

rine stoker along very much the same line which it is to place on the market simultaneously with the "Class E."

In this stoker the coal is deposited by coal conveying machinery or hand labor in the large hopper, and conveyed under the fire by means of a reciprocating sliding bottom which runs the full length of the trough. As the coal rises from the trough it is distributed to the side of the furnace by the arrangement of moving bars, shown in the accompanying plate.



The American Stoker Class "E."

The coking and burning is constantly carried on by the action of the moving bars to the dumping trays along each side wall, where the resulting clinker and ash are deposited. These dumping trays are operated by levers on the outside of the furnace, enabling the ash and clinker to be automatically discharged.

This stoker is first a feeder and a thorough coker, then it distributes the fuel perfectly, and is self-cleaning.

The sliding bottom is actuated by a steam motor shown in plate 1 at C, the number of strokes of which may be varied from one in three minutes to 15 in one minute, and as each stroke carries into the furnace about 6 pounds of coal it will be seen that the rate of feed can be varied between very considerable limits.

The movement of the piston of cylinder C is transmitted directly through the piston rod to the cross head D which is bolted to the sliding bottom E. This sliding bottom extends the full length of the retort. The block B has the same movement as D and E. Thus the coal is fed by block B from the bottom of hopper A on to the sliding bottom E, which not only carries it to the back end of the furnace, but forces it to rise the full length of the trough. As the coal rises in the trough or coking retort it is flooded on to the bars F. These bars are alternately moving and

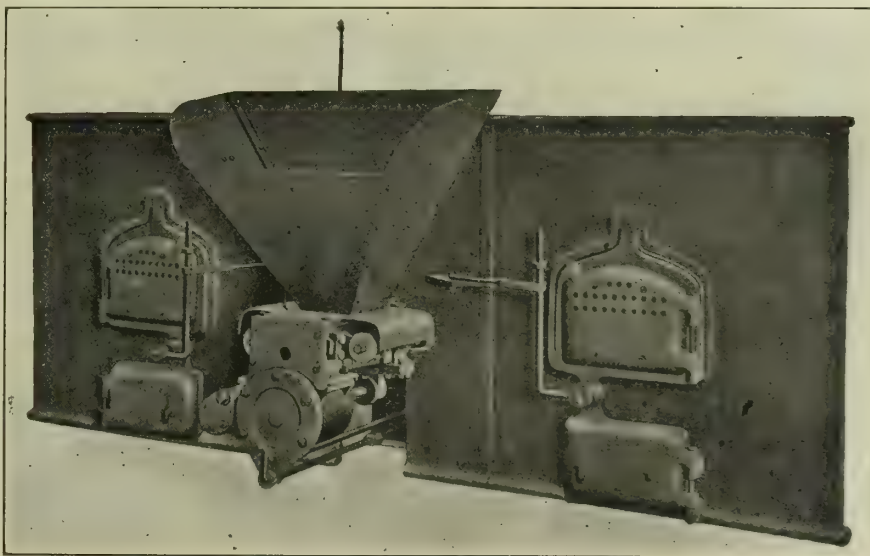
fixed. The moving bars work transversely to the retort. The extent of the movement is from one-half to one inch, depending upon the size of the furnace and other conditions. On the bottom of each moving bar are cast two lugs which engage with the bulb of the longitudinal rocking bars H, shown on plate 2. These rocking bars in turn receive their movement through the agency of the two spirals and nuts, which mechanism is entirely outside the furnace. The nuts are bolted to cross head D and there-

fore reciprocate with the bottom E. It will be seen that the reciprocation of the nuts causes the spiral to rock to and fro.

The movement of the grates in addition to carrying the burning fuel to the

tion of ash and clinker on plate K when necessary.

One of the important features of this stoker is the distribution of the air which enters the stoker through the aperture N, covered by the windgate O, (plate 1). This windgate is adjustable by a crank P, at the outer end of the furnace. The air upon entering the windbox Q passes upward along each side of the trough or retort, and is discharged partly through the holes R into the retort. The surplus air passes through the bar F, which, it will be observed, is made hollow. This bar, however, has no opening in its top surface and no air can find its way into the fire above until it has passed through the aperture S. At the bottom and at the bar from which aperture it is discharged into the ash pit T. From the ash pit T the air rises and passes through the small spaces between the bars into the coked fuel. It will be seen that the action of the air in passing through the bars is to keep them cool, thus preventing their burning out. The heat taken off the bars in this way rises the temperature of the air in the ash pit T to from 350 degrees, Fahrenheit, to 400 degrees, Fahrenheit. The pressure of air in the windbox Q varies from $\frac{3}{4}$ -inch to $1\frac{1}{4}$ inches, and at T from zero to $\frac{3}{8}$ of an inch of water. When the dumping plate K is left down, air will find its way upward into the boiler, but the action of dumping and rising K takes but a moment, hence the loss from the air, which passes upward into the boiler, is so inconsiderable as to make it unneces-



The American Stoker Class "E."

sides of the furnace also conveys the clinker down and deposits it on plates K, which are fastened to hinge bar L. This hinge bar is actuated by letters (see plate 2) conveniently placed outside the furnace, for dumping the accumula-

tory, and even undesirable, to close windgate O.

The class "E" machine is a combination of underfeeding the coal in such a manner as to insure smokeless combustion of all volatile hydrocarbons as

spreading the burning fuel at a proper thickness uniformly over a very wide furnace, a regular air supply at very low pressure and a self-cleaning grate.

1.—Greater economy and greater boiler efficiency with a given coal. This is especially the case with variable leads, regardless of the changes in the lead or the capacity of the boiler, the grate surface is always kept well covered with coal.

2.—Ability to burn a wider range of fuels, thus enabling the users to take advantage of change of prices in the coal market.

3.—Ability to meet sudden demands for steam.

4.—With cheap slacks a higher rate of combustion per square foot of fire surface.

5.—No necessity for having high chimneys. The saving thereby is often sufficient to pay for the stoker installations.

6.—Less space occupied in front of boilers.

7.—The stokers can be examined and repaired without the necessity of removing from furnace.

8.—Self-dumping clinker trays.

THE ROAN TYPE GATHERING-LOCOMOTIVE.

An improved electric mining locomotive of the "gathering" type, in which a single powerful motor performs the functions of both propulsion and operation of the gathering reel, has been brought out by the Westinghouse Electric & Manufacturing Company and the

exactly the requirements demanded by practical mining men.

In the Roan locomotive the single motor used to drive the wheels is arranged to be detached and connected to the wire-rope gathering reel. The wheels or the reel may thus be operated either independently or simultaneously, winding the rope while the locomotive is moving or standing.

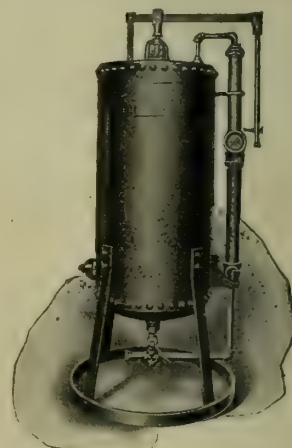
The arrangement described secures advantages of flexibility, compactness and reduced amount and cost of electrical apparatus attained in no other type. The gyration of one powerful motor to perform the duties of both gathering and driving motors cuts in half motor and controller expense, at the same time making the total power of the traction-motor available for the gathering reel.

When loaded cars are to be hauled from the working face to the butt-heading, on which the locomotive stands, the rope is paid out and attached to the cars. The main driving-motor is then unclutched from the axle and connected to the reel which winds the rope, drawing the car toward the locomotive, which stands, with its brakes set, on the heading-track. The provision for propelling the locomotive at the same time the reel is in operation enables the cars to be swung on to the heading without sawing the rope on the rib at the room-neck. In service, many applications have suggested themselves for the combined tractive and hauling-in actions secured from the motor. Derailed cars may be easily replaced on the track, timbers and rails recovered from under falls of rock, rails loaded on cars; and, in fact,

that of any single-motor or two-motor locomotive. As shown, the wheel-base is extremely short, although the wheels are of full size, and the maximum amount of service is secured by the spring-suspension of the frame and motor. The locomotive frame is made of steel angles and plates, giving maximum strength for a given weight.

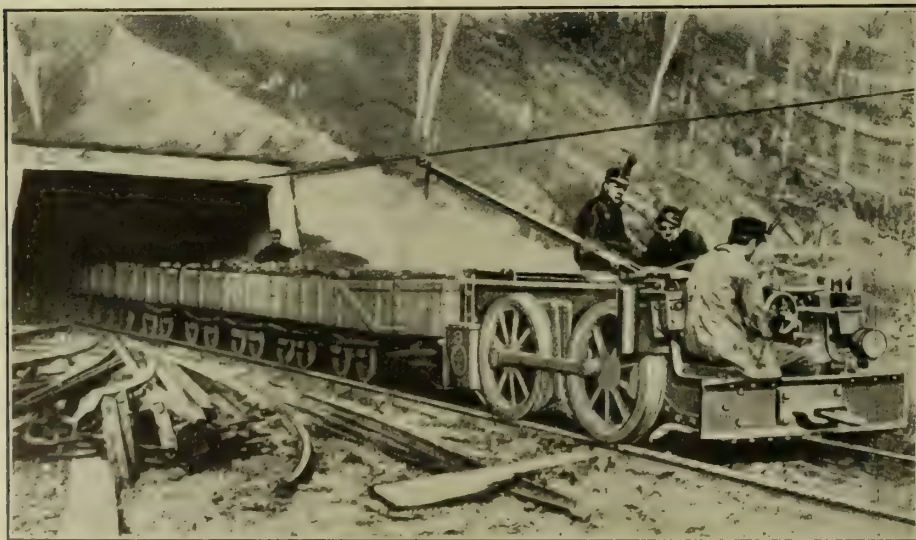
DANIC SAND BLAST.

Present-day appreciation of the value of the sand-blast machine is gradually increasing. Modern metal-working plants are relying more and more on the blast of sand for the cleansing of large and small castings, in all metals and shapes, of all objectionable matter from either smooth or rough surfaces—even inaccessible corners, deep crevices and inside surfaces. The feature of greatest importance in these machines lies in the means for controlling and



regulating the flow of sand. Herewith is presented an illustration of a Danic sand blast, in which the D. M. Nichols Iron Works, the makers, claim these requirements are perfectly and completely met by the application of two valves each so constructed as to best perform its particular duties. One is designed with a view of durability and is used only to start and stop the flow of sand. The other is designed to regulate quantity of sand rendered and once adjusted always adjusted. By this arrangement a "fool-proof" sand blast is produced.

While these machines are designed to operate under either high or low pressure the most economical and satisfactory sand blast practice, the makers claim is the use of 3-16 inch or 1/4-inch nozzles, operated under 70 to 100 pounds air pressure. Due to the fact that the air pressure in a Danic blast is, at all points of its mechanism absolutely uniform, the flow of sand from the reservoir to the blast pipe is actuated solely by gravity. This insures long life to the regulating valves. These machines are sold by Samuel W. Hay's Sons, 1415 Keenan building, Pittsburgh.



Roan Type Gathering Locomotive.

Baldwin Locomotive Works under the patents of an invention of J. M. Roan. Mr. Roan, who is general manager for the Clinchfield Coal Corporation, is a practical mine operator, and on this account the gathering locomotive of his invention may be relied upon to meet

the reel can be used for any kind of general hoisting work.

The motor transmits its power through a single spur-gear directly to one axle. The two axles are connected together by side-rods spaced 90 degrees apart, securing increased tractive effort beyond

LATEST TYPE OF ELEVATOR ENGINES.

One of the latest type of electric elevator engines, as shown by the cut herewith, is that being made by the Ohio Elevator & Machine Company, and being handled in this territory by the Pittsburgh Elevator & Supply Company,

of the motor, is now being placed on the side of the housing, and operated by gears in place of sprocket chain, thus being a desirable improvement.

The Pittsburgh company has recently installed in this territory several plunger

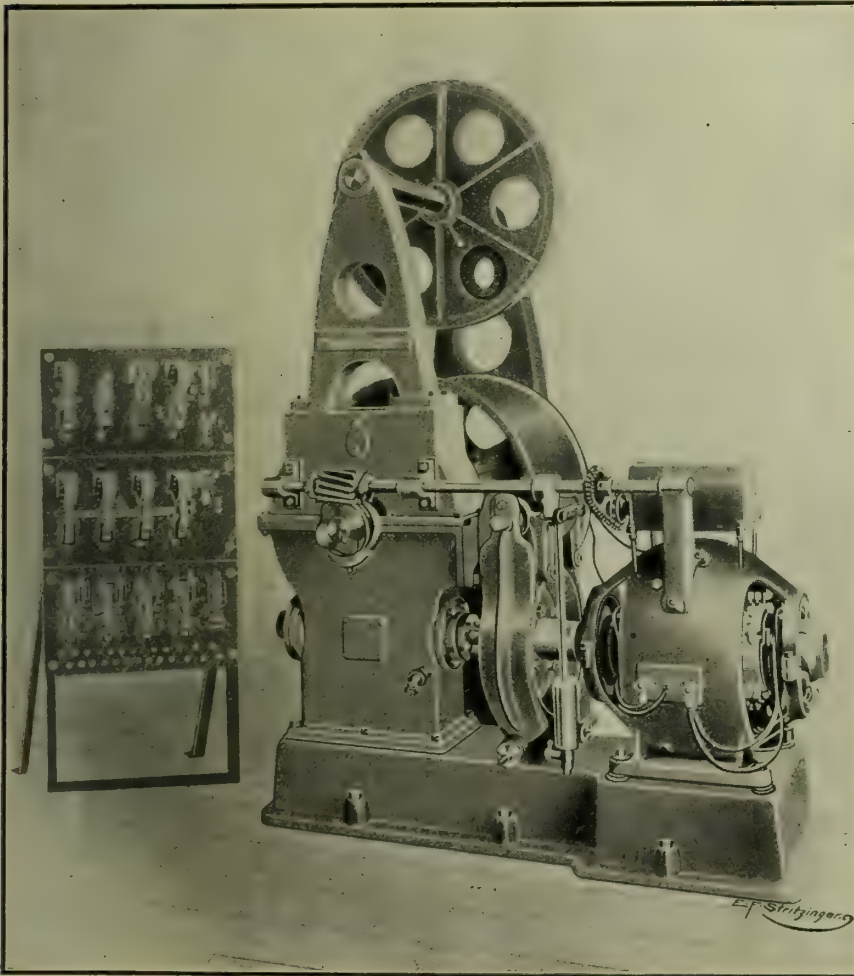
hydraulic elevators, these being in the Famous department store, Braddock, Pa.; Braddock General hospital, Braddock, Pa.; F. G. Bishoff, Braddock, Pa., and others. One of the latest electric installations has been made at 526 Smithfield street, Pittsburgh, the building occupied by Ambuhl Brothers' piano store.

Recently the company has furnished and installed numerous hand power machines, which have given entire satisfaction. The hand power, cafe type dumbwaiters show a marked improvement along this line. Installations have been made at Joyce hotel, Ferry and Liberty street, Pittsburgh, Joseph A. Connelly, McKeesport, and other places.

The Ohio Elevator & Machine Company, whose plant is located at Columbus, is a newly-organized concern, not having any connection whatever with the New American Elevator Company, which recently failed, and the new organization was not in any manner the result of the New American failure.

POWER STATION FOR BOSTON.

The Boston Elevated Railway Company, has not completed plans for the projected new power station, but it is well known that it cannot be delayed a great while, for existing power facilities are hardly equal to the present demands of the great system. The company's engineers are not prepared to make even preliminary announcement, but it is understood that a great central station will be built, equipped with turbines engines, totaling a very large unit. It is stated that at least one of the present plans located within the city will be done away with, and the power centralized in the most modern of the company's equipment.



908 Century building. The equipment consists of a winding machine, that is, lines to which is attached a Roth compound motor, controlled by Cutler-Hammer self-starter and reverse switch. In high speed work, an interloper motor is used, which balances itself to all loads. The Cutler-Hammer control is a recognized standard, and needs no further explanation. The accompanying cut shows a Cutler-Hammer full magnet series relay control.

These engines can be operated either full magnet with switch in car, or semi-magnet with lever, wheel device, or hand rope as may be desired. The stop motion switch, which is shown on top



Rust-Resisting Sheets

BLACK OR GALVANIZED

PRICES FROM YOUR JOBBER OR

THE STARK ROLLING MILL CO.,

CANTON, OHIO.

Wanted, For Sale, Bargains, Etc., in Brief.

POSITIONS WANTED.

Drawings—Structural and mechanical designs and details. Moderate prices. Address Box 126 Industrial World.

Civil Engineer, 20 Years Experience, desires position as locating or resident engineer; also familiar with drainage work; AI reference; have instruments. Address Box 43, Amboy, Ill.

Foundry Foremen and Others wanted to increase their earning capacity 25 to 50 per cent, by taking a course in the mixing of irons with the Milwaukee Correspondence Schools, Goldsmith Bldg., Milwaukee, Wis.

A Position as Manager or Superintendent; age 29; a graduate Massachusetts Institute of Technology; at present in charge of a boiler plant with an annual output of nearly 100,000,000 K. W. H.; reasons for desiring a change; 12 hours per day, 365 per year. Address Box 4, Darlington, Mo.

WANTED.

Situation—An experienced accountant, correspondent and general office man, accustomed to handling men and accounts, desires position where energy and attention to details will merit recognition. Address Postoffice Box 194, Northside, Pittsburgh.

Wanted—Attention, manufacturers. An old-established rolling mill, whose output is high grade bar iron, and black and galvanized sheets, and having ample ground in Pittsburgh district, would be interested in having located on their ground manufacturing adjuncts that use above materials. Parties engaged in manufacture of trade articles from above materials, who contemplate change of location, or engaging in new enterprises, can address office of the Industrial World, Pittsburgh, Pa., giving full particulars as to tonnage used; space desired, etc.

Wanted — A second-hand 15 or 16 h. p. stationary gas engine. Address Norwood Machine Company, Cincinnati, O.

Wanted — Manufacturers wanted to build cold rolled shafting machinery on royalty basis, under United States patent No. 895,364, dated August 4, 1908, described in the Industrial World December 28, 1908. Address John S. Griffin, Roslyn, Washington.

SEALED PROPOSALS.

Machines for Tabulating Agricultural Statistics. — The Director of the Census is considering various types of machines with a view to determining the one best adapted for tabulating the agricultural statistics of the Thirteenth Census. Any one possessing a machine adapted for this purpose is invited to present the

same for test in practical operation at the Bureau of the Census, Washington, D. C., on or before July 31, 1909. For further information address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

Sealed Proposals will be received at the office of the Director of the Census, Washington, D. C., until 2 o'clock p. m., August 9, 1909, and then publicly opened, for furnishing all the labor, materials, and work necessary for the construction in lots of 60, 75, 100, or 125 tabulating machines and delivering the same complete, free of all charges for transportation, at the Census Building, Washington, D. C. right is reserved to accept or reject all bids in whole or part, to strike out any item or items in the specifications, and to waive any defects. For specifications, blueprint drawings, blank proposals, and full information, address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

FACTORIES WANTED.

Factories Wanted — Grafton, W. Va., will give to manufacturers, a free site on railroad siding, with shipping facilities in all directions, five-cent gas, and an inexhaustible supply of soft water and coal. For information, address Secretary, Grafton Board of Trade.

MANUFACTURING SITES.

Manufacturing Sites — Free, on railroad and Ohio river and street car line; cheap gas; cash bonus given to good mills, factories and shops. Special facilities for sheet and tin mills. Address Paden City Land Company, 45 South Twentieth street, Pittsburgh, Pa.

FOR SALE.

For Sale—Several power generators with their engines and switchboards, lighting generators, hoisting engines, mine wagons, air compressors, feed water heater, steel head frames and bins. All this apparatus brand new at manufacturers' shops. Owing to contracts for this equipment being placed 18 months ago, can sell same at lower prices than it can be purchased for today and can also give immediate delivery. Address Box 200, Industrial World, Pittsburgh, Pa.

GAS ENGINE AND GENERATOR FOR SALE.

One Westinghouse 13"x14" 3-cylinder gas engine, with usual fittings and dynamo igniting spark coil, connected by patented flexible insulated coupling to one General Electric Company direct current generator, type M. P., 6 piles, 100 K. W., 270 R. P. M., 250 volts, 400 amperes, guaranteed to stand 50 per cent overload for two hours and 100 per cent momentarily.

All in first class condition. Used only as spare. We are replacing with 500

horsepower gas engine of our own make, and 400 K. W. generator. For price and photograph address Mesta Machine Company, Pittsburgh, Pa.

For Sale — One second-hand 8x9" Chuse engine, direct connected to 15 k. w. Triumph generator; good condition. Electric Machinery & Specialty Company, 204 Franklin avenue, St. Louis, Mo.

For Sale—Rock Drill—Ingersoll make; motor, 1 h. p., complete; shafting, pulleys, hangers, belting, lathes, 1 drill press, cheap; boilers, engines, pumps. William H. Flynn Machinery Company, 404 East Second street, Cincinnati, O.

For Sale — Engines, lathes, shapers, drills, planers, milling machines and other machine tools. Examine our 18"x8' new latest improved lathe, for automobile shops, \$325. Also, latest improved B. G. crank shaper, \$250. Western Machinery Company, 828 West Sixth street, Cincinnati, O.

For Sale—One-fifth interest in an up-to-date manufacturing plant, building a line of special and patented machinery, and having a very extensive jobbing trade. Purchaser can secure a salaried position as engineer, chief draftsman, or salesman. Price of one-fifth interest \$10,000. Address Box 154, care Industrial World, Pittsburgh, Pa.

Machinery Bought, Sold and Repaired — Engines and boilers, all styles and sizes, both new and second-hand; machinery of every description for all purposes; also pulverizer and crushers. Write to me for anything you want. Gruendler Machine Company, 928 Main street, St. Louis, Mo.

For Sale—One 18x24" slide valve engine 2 66"x18' tubular boilers, 1 heater, 1 deep-well pump and 5 wood working machines; will overhaul and put in first-class condition, cheap; also, several direct current motors, 3, 5, 10 and 15 h. p., 220 volts. The Farrin-Korn Lumber Company, Winton Place Station, Cincinnati, O.

For Sale — Rolling Mill—The property known as the Seyfert Rolling Mill, consisting of Puddle and Plate Mills for making sheared skelp is offered for sale. Located about four miles from Reading, Pa., on the Wilmington & Columbia Division of the Reading Railroad. For particulars apply to Samuel R. Seyfert & Brother, Reading, Pa.

For Sale—51 feet 16 double belting, 40c per pound.

One 20-h. p. 500-volt motor.

One 10-h. p. 500-volt motor.

One 3-h. p. 220-volt, back-geared motor.

One 6x6 air compressor.

One 4x6 air compressor.

One 100-h. p. Corliss engine. American Electric Company, 1106 Cass avenue, St. Louis, Mo.

"POOL SYSTEM" AT CAR PLANTS.

In the current number of the "Survey," New York, Paul U. Kellogg has an article on the strike at the McKees Rocks plant of the Pressed Steel Car Company, which is especially noteworthy for its clear explanation of the so-called "pooling system" of wages, the chief cause of conflict by the employees.

The plant was working half force, full time, at the beginning of the strike, says Mr. Kellogg. With the resumption of active operation early in the year, the track system was installed and the pooling system given general application. A track runs the length of the erection aisle. The trucks are placed on the track at one end, electric cranes pick up the plates, piece by piece they are put together and riveted, and a completed car rolls off the other end of the track. There are perhaps 12 positions on this track and at each position a group of men who perform one step in the process of completing a car. Every position is allowed, say, 20 minutes. If the gang at position eight is slow, or has difficulties in getting out its stunt, it holds up the whole procession, and every man in the earlier positions loses time. Gang 8 wants car B from gang 7 the minute it is through with car A; and gang 7 always wants gang 8 to be through with car A by the time it finishes car B, so it can take car C from gang 6. If time wages were paid, and a car erected in a stationary position, all the delays would fall on the company, and only constant prodding from a foreman would keep a loafer or a greener at high speed. By means of piece wages and a track down the erection aisle, one gang drives another.

But pressing, punching and riveting steel plates of all shapes, is not so easy to reduce to a piece rate standard as the tonnage which runs through all departments of a steel mill; therefore, the piece-rate pooling system was installed. The first attempt was to lump all the men in general pools; but this was abandoned. At the time of the strike there were about 52 pools, ranging from 10 men to 150 each. The track system with 380 men was split into three pools. Each man in a pool was rated at so much an hour. This rating, the company states, was a minimum, which he would get in any event if he put in full time. In most cases all the riveters in a pool had the same rating; similarly all heaters, helpers, etc. What more each man made beyond his rating, depended on the gross work turned out by his whole pool.

Car orders vary greatly, but the parts which go into them, and the operations in putting these parts together, are fairly constant, and can be reduced to units. The company has experts who figured the piece rates which it would pay a

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pool for turning out the units or pieces going into the order.

To make this clear, take a sample pool of six men, whose account for a fortnight was given me at the company offices. They performed this work:

500 pieces at 10c each	\$ 50
100 pieces at 15c each	15
200 pieces at 20c each	40
300 pieces at 10c each	30

Total due this pool\$135

The account with the men in the pool was as follows:

Occupation	Hour Rate	Earnings by hour rate	Pool piece work earnings
Riveter .....	.22	\$30.80	\$38.86
Helper .....	.17	17.80	21.45
Heater .....	.16	12.00	15.14
Riveter .....	.22	11.00	13.88
Helper .....	.17	17.00	21.45
Heater .....	.16	19.20	24.22
Totals		\$107.00	\$135.00

The pool piece-work earnings of each man were apportioned in this way: If all men in the pool had been paid by their hourly ratings, they would have earned a total of \$107. But by handling 1,100 pieces during the fortnight at piece rates, we have seen, the pool was entitled to \$135 or \$28 excess. Divide 135 by \$107 and you have 1.2617 for a pool rate, with which to multiply the day rate earnings of each man to get his share of the excess. Thus John Doe, helper, in the same pool, who worked 100 hours and was rated at 17c, was entitled not only to 100x17c, or \$17; but to 1.2617x 17, or \$21.45—his pool piece work earnings for the fortnight.

This is the pool-piece-work system in a nutshell. From a manager's standpoint it has a signal administrative advantage in making the men each other's monitors in keeping up speed and discipline. When the earnings of an entire pool are dependent on the output of every man in it, it is claimed the men will get rid of the drones, and develop spirit and team play.

"OPEN SHOP" AND "PROFIT-SHARING."

The fight between the Youngstown (O.), Sheet & Tube Company, and the Amalgamated Association of Iron, Steel & Tin Workers, on the "open shop" pronouncement issued by the company, July 1, with the profit-sharing feature, announced a few days later, has reached the letter-writing stage. President J. A. Campbell, of the Sheet & Tube Company, writes a Youngstown paper, answering a recent union statement, as follows:

Dear Sir—I have read the signed statement published in your issue of the 27th by Llewellyn Lewis, vice president of the Amalgamated Association, and as this statement is likely to mislead the public and our employees by careless-

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ly misrepresenting the facts, the writer feels called upon to depart from his established rule and reply to same.

I quote from his statement as follows:

"Mr. Campbell states that he is paying the same rate of wages in his blast furnace, steel plant and pipe mills, as the United States Steel Corporation, and yet he says his company is in favor of paying good wages, and no doubt thinks that he is paying good wages to his laborers and steel workers when he compels them to work 12 hours per day, seven days a week for less than two dollars per day."

We have taken the pains to go over the pay roll of our steel plant for the first half of June, which was the last pay the men worked 12 hours, and herewith submit the average pay per day per turn for each position which we call by number:

No. 1 Position	\$2.30
No. 2 Position	5.04
No. 3 Position	3.66
No. 4 Position	9.38
No. 4 First helper	7.04
No. 4 Second helper	5.25
No. 5 Position	4.22
No. 6 Position	3.28
No. 7 Position	6.10
No. 8 Position	3.28
No. 9 Position	6.10
No. 9 Helper	5.63
No. 10 Position	8.63
No. 11 Position	5.16
No. 12 Position	4.69
No. 13 Position	4.22
No. 14 Position	5.16
No. 14 Helper	3.28
No. 15 Position	6.10
No. 15 Helper	4.22
No. 16 Position	3.00
No. 17 Position	3.80
No. 18 Position	7.71
No. 19 Position	5.28
No. 20 Position	3.65
No. 21 Position	8.55
No. 22 Position	6.50
No. 23 Position	6.49
No. 24 Position	3.63
No. 25 Position	3.63
No. 26 Position	4.44
No. 27 Helper	2.82

The average for all 12-hour men in our steel plant for that pay was \$4.90 per day.

Our steel plant is now working only eight-hour turns, but we believe that they will earn more per hour than on the 12-hour basis.

Mr. Lewis makes the additional statement that 60 per cent of the men employed in the steel mills of the United States Steel Corporation earn less than two dollars per day. We have not the exact knowledge as to the daily earnings of the men in the corporation steel plants, but believe they are greater than our own, because in most of their plants they are making larger tonnage and these men are all paid by the ton. Mr. Lewis would have known these statements were untrue when he made them and might mislead the public.

We did guarantee to our sheet workers that their wages would not be reduced during the year ending June 30, 1910, and offered to contract with them to that effect, and our verbal guarantee or written contract are both good and will be carried out. Mr. Lewis pretends to think that we refused to sign their scale because we want to take advantage of our employees and reduce wages. In reply to this, will say that we will pay the same wages as the American Sheet



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& Tin Plate Company at all times. They produce half the sheets made in this country, and are our principal competitor, and we cannot afford to pay more than they and could not secure men at a less wage rate.

Mr. Lewis makes light of our intention to share with our employes a part of the profits of the company each year. His statement that we will reduce the men 5 per cent to 10 per cent to accumulate this fund is silly. It was not necessary for us to share our profits with our employes, as no similar industrial plant in this country, to our knowledge, does this, but we feel that our employes who are industrious, faithful and loyal are entitled to participate in the prosperity of the company beyond their ordinary wages. Mr. Lewis well knows that profit sharing will solve future labor troubles in this country, and when it becomes general, as I believe it should, labor unions will be a thing of the past.

Our principal reason for not signing the Amalgamated scale was that we are tired of treating with Mr. Lewis, and the other officials of the Amalgamated Association, who are not in our employ, and who are not familiar with the conditions in our plant, and do not even live in this community.

We do not blame our sheet workers for the position they have taken, but if they continue to take the advice of these officials, history will repeat itself, and many good men will be obliged sooner or later to find employment elsewhere, as they did at the Carnegie works here several years ago. The reputation of the writer and our company cannot be very bad, as we have many applications from sheet mill workers for positions, and will soon try and operate our sheet mills on the basis we propose.

The writer has been in this business 18 years, and is willing to submit his "past record" to the "common sense" of our employes as to what they can expect in the future.

J. A. Campbell, President.

Louis Follett, secretary and commercial manager of the Standard Tin Plate Company, Canonsburg, Pa., has issued the following statement for the purpose of correcting reports in circulation: "We are not involved in the controversy existing between the Amalgamated Association and some of the mills of our competitors. We are operating our 10-mill plant to its fullest capacity, and beyond the loss of a few men here and there, which we are able to promptly replace, we are at the present time not involved in any of the matters of dispute referred to, our plant harmoniously operating and our men absolutely satisfied, as far as we know, with our conditions."

LEHIGH CONSTRUCTION.

Contracts for the construction of nine miles of track of the four track system the Lehigh Valley is perfecting between New York and Mauch Chunk, Pa., have been awarded to the John A. Kelley Company, of Philadelphia. The section extends from Reading to Island Park, N. J., and the work is to begin at once.

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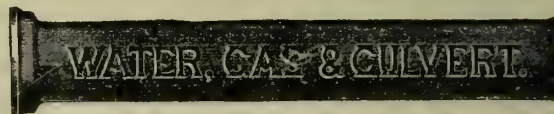
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NEW PATENTS GRANTED.

The following patents granted July 27, 1909, are reported expressly for the Industrial World, by J. M. Nesbit, patent attorney, Park building, Pittsburgh, Pa., from whom printed copies may be procured for 15 cents each:

Machine for reducing the walls of tubular billets and for other uses, Leonard D. Davis, Erie, Pa.; air-cooling apparatus, John E. Gloekler, Pittsburgh; dash-pot, Franklin Phillips, Newark, N. J.; screw-coupling, George Schuhmann, Reading, Pa.; method of treating slag, Story B. Ladd, Washington, D. C.; smoke-consuming furnace, Andrew Gropengieszer, Cincinnati, Ohio; method of treating aluminous materials, Aldus C. Higgins, Worcester, Mass.; car-wheel (2) William McConway, Pittsburgh; mill for rolling shapes, Louis R. Custer, Munhall, Pa.; window pane fastener, Samuel J. Drago, Toledo, Ohio; steam-hammer, Thomas E. Holmes, Sheffield, England, assignor to Davy Brothers, limited, same place; explosive engine, Arthur F. Clarke, Butler, Pa.; milling machine, James E. Key, Wilmerding, Pa., assignor to the Westinghouse Air Brake Company; up-draft furnace, Orel D. Orvis, Bayonne, N. J., assignor to the United States Coal Saver & Smoke Consumer Company, Augusta, Me.; blast-furnace-charging apparatus, Frank C. Roberts, Philadelphia; lubricator, William L. Newbaker, Wilkesburg, Pa.; coke-oven, Louis Bansart, Jolimont Haine, St. Paul, Belgium; apparatus for generating hot compressed gas, Hans Neumann, Berg Gladbach, Germany; toughening steel, also ballistic plate, (2), Samuel S. Wales, Munhall, Pa., assignor to Carnegie Steel Company, Pittsburgh; apparatus for shaping metal, William W. Bissell, Beaver, Pa.; apparatus for coating metals, Henry M. Huxley, Worcester, Mass., assignor to American Steel & Wire Company, same place; method of galvanizing, George L. Patterson, Thomas L. Morne, and Carl H. Zieme, New Castle, Pa.; operating mechanism for furnace-valves, John W. Seaver, Cleveland Heights, Ohio, assignor of one-half to the Garrett-Cromwell Engineering Company; method of treating armor-plates, Samuel S. Wales, Munhall, Pa.; railway-tie plate, Lawrence Dilworth, Pittsburgh, assignor to Dilworth, Porter & Company, limited, same place; tube-cleaner, William S. Elliott, Pittsburgh; rotary engine, Louis L. Driggs, Sharon, Pa.; method of refining iron, Paul Sejournet, Paris, France; manufacture of metal lathing, William Klocke, Brooklyn, N. Y., assignor to E. W. Bliss Company, same place; sectional sheet-metal wheel, James F. Craven, Pittsburgh; crane, Paul H. Douglas, Cleveland, Ohio, assignor to the Wellman-Seaver-Morgan Company, same

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place; rolling-mill, Hugo Keitel, Dusseldorf, Germany, assignor one-half to the firm of Momberger & Company, same place; fuel for internal-combustion engines, George B. Selden, Rochester, N. Y.; method of generating producer-gas, also grate for gas-producers and means for removing ashes therefrom (2), Harry F. Smith, Lexington, Ohio; internal combustion engine, Emile Berliner, Washington, D. C.

INVESTIGATION OF OPEN HEARTH STEEL RAILS.*

During the past few years the proportion of open hearth rails rolled has increased rapidly, owing to the fact that by cutting down the phosphorus to a minimum a great increase in toughness results, rendering possible a much higher carbon content than is safe in a high phosphorus Bessemer rail, and hence a higher elastic limit, with increased hardness and capacity for wear. With good mill practice very favorable service results may be obtained, but we have known of instances in which such rails have averaged only one-third the wear found with the usual Bessemer rails when laid in track end to end with the others and under exactly the same conditions of service. As has been pointed out repeatedly, the name "open hearth" is no talisman for production of rails certain to give good service, and it is well known that rails of this method of manufacture are subject to the same general defects which may be found in Bessemer rails, and hence require equal care during the process of manufacture.

In the study of causes of failure of rails, striking instances occasionally occur which are of special interest in view of the results in service. An example of this type was furnished not long ago. An open hearth rail had broken in service into about 40 pieces, derailing a train, but fortunately causing no loss of life.

A critical examination was made to determine the exact cause of the failure. In the preliminary investigation it was found that a blow-hole began near the receiving end of the rail, about one-half inch below the top of the head, parallel with the surface of the latter, and extended clear to the running off end of the rail. Within a short distance from the start the unwelded seam spread from one side of the head to the other, with oxidized surfaces. In the unbroken rail no defect could have been visible, and even after the fracture the only sign of defective condition upon the contour of the unbroken pieces was a faint line like a roll mark along the side of the

* Taken from a paper by Robert Loh, before the American Society for Testing Materials, Atlantic City, N. J., June 26, 1909.

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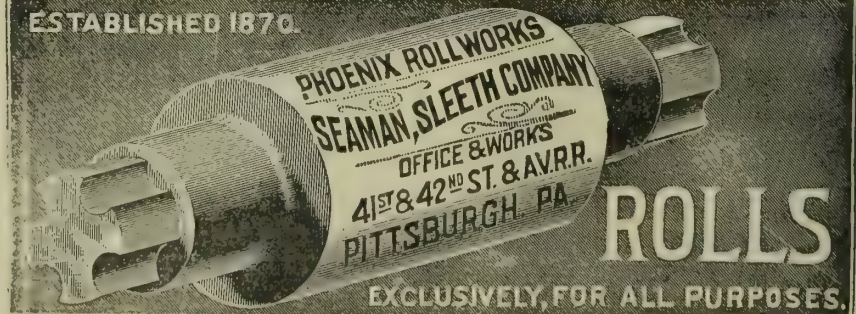
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head, generally covered with mill scale.

When the fracture came evidently the one-half-inch layer upon the top of the head cracked, throwing the end against the opposing wheels, and thus causing the derailment, the remainder of the rail being ground into pieces by the force of the impact and the pounding of the wheels.

In order to study the condition of the steel a transverse section was cut at a point about three feet from the receiving end of the rail, and an analysis made of the borings taken with a five-eighths-inch drill about one-half inch below the top of the web showed the following composition:

	Per cent.
Carbon	1.070
Phosphorus	0.031
Manganese	0.758
Sulphur	0.025

The heat average was about as follows:

	Per cent.
Phosphorus	0.030
Carbon	0.75
Manganese	0.76
Sulphur	0.05

In order to note the extent of segregation in the section, borings were taken with the five-eighths-inch drill about one-half inch to the side of the center of head at a distance of $1\frac{1}{2}$ inches from the location of the first borings, and the following composition was found:

	Per cent.
Carbon	0.918
Phosphorus	0.027

From the above it is clear that radical segregation of the ingot existed and accounted for a decided difference in the physical properties of the steel in closely adjacent places. The granular structure of the steel was about normal, showing that burning or overheating had not occurred.

As the next step in developing the physical character of the metal surface of the section was polished and found that the steel contained a large number of porous spongy spots in the web, while a blowhole extended transversely across the head. Upon etching the steel slightly with alcoholic iodine we found additional indication of the unsound condition of the steel, proving that the defects were not local, but extended throughout the section. The fracture was unquestionably caused by the large blowhole across the head, but even though this had not been present short life would have been certain to result, owing to the general condition of unsoundness, for the fact has been demonstrated so often that it has become an axiom that good service cannot be expected from an unsound rail.

In many cases of unsoundness the general location and character of the defect is indicated by the service which is



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given and the manner in which the rail begins to fail. When great porosity exists, or when much slag and other matter is present, silvering generally follows after a short life, and the steel upon the outside edge of the head begins to flow, and ultimately sloughs off, and is called "soft steel" by the track men, although this action gives no indication of the carbon contents; it is simply a consequence of unsoundness. We have found that the service suffers severely when unsoundness exists near the upper portion of the head, and fracture may occur or slivering and mashing down. When the same defects are somewhat below the surface, leaving a layer of sound steel one-quarter inch or so in width, good service often results until the sound metal has worn away.

THE FIRST ELECTRIC LOCOMOTIVE.

J. A. F. Aspinwall, president of the Institution of Mechanical Engineers, quotes from the "Edinburgh Journal," the following, which originally appeared in the London "Times," December 10, 1842.

A trial of an ingenious machine, constructed by Mr. Davidson, was made last month on the Edinburgh & Glasgow Railway, in presence of a number of gentlemen, many of whom are eminent for their scientific knowledge. The carriage was impelled along the railway about a mile and a half, and traveled at the rate of upwards of four miles an hour, a rate which might be increased by giving greater power to the batteries and enlarging the diameter of the wheels. We understand that the carriage was built at the expense of the railway company, and cannot but congratulate them in having the discernment to employ Mr. Davidson, a gentleman of much practical knowledge and talent, to whose genius great discoveries have been made in electro-magnetism, by whom the carriage was projected and to whose unwearied exertions the practicability of the scheme is almost placed beyond a doubt.

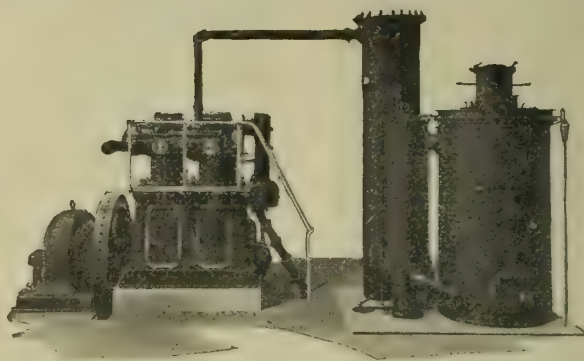
The dimensions of the carriage are 16 feet long by seven feet wide, and it is propelled by eight powerful electro-magnets. The carriage is supported by four wheels of three feet diameter. On each of the two axles there is a wooden cylinder, on which are fastened three bars of iron at equal distances from each other and extending from end to end of the cylinder. On each side of the cylinder, and resting on the carriage, there are two powerful electro-magnets. When the first bar on the cylinder has passed the faces of two of these magnets, the current of galvanism is then let on to the other two magnets. They immediately pull the second bar until it

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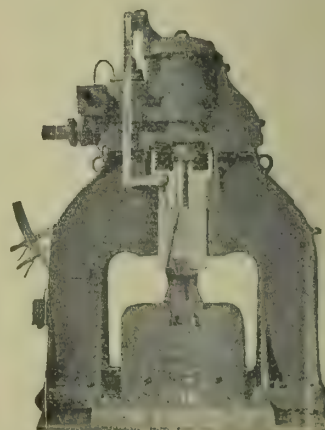
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comes opposite them. The current is then cut off from these two magnets, and is let on to the other two. Again they pull the third bar until it comes opposite, and so on—the current of galvanism being always cut off from the one pair of magnets when it is let on to the other.

At each end of the axles there is a small wooden cylinder, one-half of which is covered by a hoop of copper; the other is divided alternately with copper and wood (three parts of wood and three of copper). One end of the coil of wire which surrounds the four electro-magnets presses on one of these cylinders, on the part which is divided with copper and wood; the other end of the coil presses on the other cylinder in the same manner. One of the wires, or conductors, which comes from the battery presses constantly on the undivided part of the copper on each cylinder. When one of the iron bars on the wooden cylinder has passed the faces of two magnets, the current of galvanism is let on to the other two magnets by one end of the coil which surrounds the magnets passing from the wood to the copper, and thereby forming connection with the battery. This wire continues to press on the copper until the iron bar has come opposite the faces of the two magnets which were thus charged with magnetism. On its coming into that position, the current is cut off from these two magnets by a rod of copper passing from the copper to the wood, thereby breaking the connection with the battery; but when the rod of copper leaves the copper on the one cylinder it leaves the wood and passes to the copper on the other cylinder at the other end of the axle, and, in so doing, connects the other two magnets with the battery, and they pull the next iron bar in the same manner. At the other end of the carriage there are four other magnets and wooden cylinders with iron bars arranged in the same manner.

The battery used for propelling the machine is composed of iron and zinc plates immersed in dilute sulphuric acid.

Ohio continues to lead all other coal-producing States in percentage of the coal product which is mined by machines. Statistics for 1908 show that there were 1,343 machines in use, the machine-mined product amounting to over 75 per cent of the total output. In 1907 there were 1,328 machines in use and the machine-mined product amounted to about 77 per cent of the total. Of the machines in use in 1908, 1,069 were of the chain-breast pattern, 135 of the puncher type, 5 long-wall machines, and 134 shearing machines.

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NEW LIGHT ON STEEL PROTECTION.

The new chemical theory of solution, osmosis, ionization, etc., developed by Faraday, Oswald and others, has led to a revolution in our understanding of the corrosion of steel by rusting, and as practically applied by Dr. Allerton S. Cushman, of the government department of public roads, bids fair also to revolutionize not only the methods of steel manufacture in certain lines, but to change the entire scheme of painting and paint making for the protection of steel structures.

To state the technical theory as concisely as possible, it may be said that the corrosion of steel and iron resulting from exposure is ordinarily due solely to auto-electrolysis (that is, an electrical current generated in the metal itself) and therefore requires the presence of an "electrolyte" or solvent, this electrolyte being, in most cases, water. Water is to a small extent always dissociated into its "ions," hydrogen, and hydroxyl, the latter consisting of one atom of hydrogen and one atom of oxygen. The hydrogen ion carries a charge of positive and the hydroxyl "ion" a charge of negative electricity. Iron is soluble to a slight extent in pure water, the negative hydrogen ions exchanging electrical charges with the positive charges carried by the iron ions.

To carry the process further, the presence of uncombined oxygen is necessary to unite with the hydrolized iron, free the hydrogen and precipitate the iron from the solution as an oxide. Any substance which, in solution, tends to dissociate and to increase the portion of hydrogen ions, to that extent stimulates corrosion in irons. Of these the most familiar examples are the strong mineral acids, the action of which proceeds so vigorously that hydrogen is set free and escapes in the form of bubbles.

Any inequalities in the structure of steel capable of producing differences in electrical tension are capable of forming a "galvanic pair," needing only the contact of an electrolyte to start a current. Thus segregated, manganese will form an electric couple with the steel in which it occurs; the compression caused by punching or bending will produce a differential; while differences in "temper" will induce the same condition.

But it has been found that certain oxidizing substances, as well as certain reducing substances, in contact with iron will induce a condition of passiveness, during which its "solution-pressure," or tendency to go into solution, is annulled, and the free hydrogen ions can no longer perform their function in corrosion. Without attempting to go into the various theories to account for this fact, we may accept it as definitely

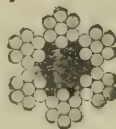
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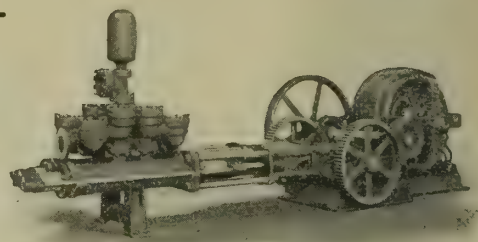
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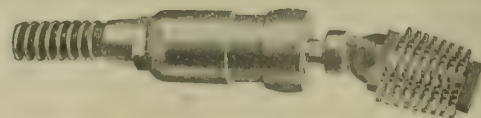
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settled that it is a fact which must be taken into consideration when we would devise a protective coating for steel; as must also the converse fact that certain other materials, probably because of the ease with which they dissociate and ionize in solution, tend to facilitate or stimulate corrosion.

These facts have been very clearly demonstrated by Dr. Cushman in several bulletins, and his work has been duplicated with very close agreement by others.

Of the materials found to be inhibitive of corrosion, the soluble chromates stand very high, steel having been found to be practically uncorrodible in a solution of these salts. This fact led to investigation of the chrome pigments, and it was found that these, excepting a few in which an acid reaction is maintained, are all similarly inhibitive—zinc chrome most conspicuously so. Zinc oxide and zinc lead white also rank high, white lead moderately high, red lead still lower, etc.

On the other hand a large number of commonly employed pigments appear to be either neutral of indeterminate, while still others, as was anticipated, seem to be more or less powerful stimulants of corrosion. Out of this mass of tentatively accepted facts has developed a provisional theory along which the more advanced manufacturers are now engaged in working out a new mode of procedure in the painting of steel.

The theory is that rust-stimulating pigments should never be placed in contact with the steel surface, but that an inhibiting priming coat should always intervene. This inhibitive coating may be suitably compounded of the chromes, zinc oxide, white lead, red lead, willow charcoal, etc., among the inhibitors, or of any of the neutral or indeterminate pigments, reinforced with a small proportion of the stronger inhibitors, such as zinc chrome, zinc oxide, zinc and lead chrome, etc. Over this priming coat the air and moisture-excluding coats can then be safely applied; these coats being designed for protection only, without regard to inhibitive qualities.

BELGIAN FURNACES.

The production of pig iron from Belgian blast furnaces during the six months ending with June last amounted to 739,486 tons, as contrasted with 578,380 tons in the corresponding period of last year.

The output of pig iron in Belgium during June reached a total of no less than 137,530 tons, as contrasted with only 97,600 tons in the corresponding month of last year. Thirty-six blast furnaces are at present in operation in Belgium out of an existing 41.

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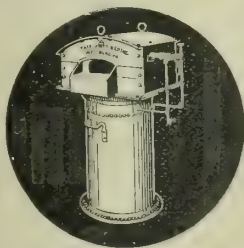
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NEW CONSTRUCTION.

Alexandria, Ind. — The Imbler Fence Company will increase its capital from \$50,000 to \$75,000, and will double the capacity of its plant.

Chicago Heights, Ill. — Bids are being received by the superintendents of the La Crosse Hay Tool Company, on a one-story brick manufacturing plant, 100x200 and 40x60 feet. A. Herschleiter, president, La Crosse, Wis.; O. S. Hitchner, secretary, Ottumwa, Iowa.

Norristown, Pa. — The J. Ellwood Lee Company will erect a new \$200,000 rubber plant, power house and shipping department in Spring Mill.

Penn City (P. O. Houston), Texas. — Penn City Iron & Steel Company, care Penn City Land Company, Scanlan building, Houston, will incorporate with a capital stock of \$500,000 to erect plant, 4,000x1,600 feet, to manufacture cotton ties and other products.

Joliet, Ill. — The Champion Machinery Company, P. F. Carroll, president; John Keep, vice president, and Royster Oliver, secretary and treasurer, Joliet, Ill., contemplate the erection of a two-story concrete factory, 66x150 feet. Charles L. Wallace, 323 Jefferson street, Joliet, Ill., architect.

Seattle, Wash. — The Sheffield Casting & Manufacturing Company, of Sheffield, Ala., will erect a pipe plant here, at a cost of \$500,000.

Butler, Pa. — The Electric Steel Company, of Cleveland, Ohio, will construct a new steel plant here.

Trident, Mont. — The Montana Port-

land Cement Company will erect a cement factory. Cost \$1,000,000.

Mannington, W. Va. — H. C. Tuttle and others have completed a stock subscription list for a new milk bottle plant here. Plans call for a cement, brick and iron factory building, with detached warehouse.

Middletown, O. — Architect Harry Hake, of Cincinnati, awarded to Caldwell & Iseminger, 215 East Fifth street, the contract for carpenter work on a two-story brick manufacturing plant addition, to be erected for the Advance Paper Bag Company. Contract for brick work let to William Smith & Company.

Franklin, O. — Foundations have been completed for a one-story brick factory, to be erected for the Franklin Wheel Company, by Contractor W. S. Roof.

Springfield, O. — Foundations have been started for a 1½-story brick factory

addition, to be erected for A. H. Heisey & Company, from plans drawn by Architect Frank L. Packard, of Columbus.

Springfield, O. — Foundations have been completed for a \$12,000 brick factory addition, to be erected for the Bettendorf Metal Wheel Company, from private plans. General contract was let to William F. Pool, 1516 Pearl street, and brick work to T. F. Quinn, 130 West Pleasant street.

Hayden, O. — Architects D. Riebel & Sons, 33 North High street, Columbus, awarded to H. J. Romick, of Hilliards, the contract for erecting a one-story brick creamery, for the Capital City Dairy Company.

Newark, O. — Architects Richards, McCarty & Bulford, of Columbus, will soon be ready for estimates on erecting a two-story brick shoe factory, on East Church street, for the G. Edwin Smith Shoe Company. Cost \$20,000.

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Newark, O. — Foundations have been started for a 1½-story brick factory addition, to be erected for A. H. Heisey & Company, from plans drawn by Architect Frank L. Packard, of Columbus.

Bedford, O. — Work will soon be started on the erection of a one-story steel factory building, for the Standard Steel Company.

Louisville, Ky. — The Western Construction Company, of St. Louis, Mo., received the contract for constructing a brick and concrete fireproof manufacturing plant, for B. Avery & Sons.

Foundations have been completed for a \$10,000 brick machine shop, to be erected for the Holophane Glass Company, by Contractors Samuel Austin & Son, of Cleveland.

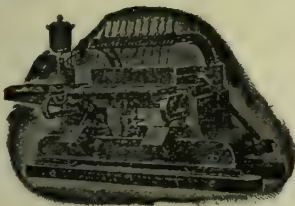
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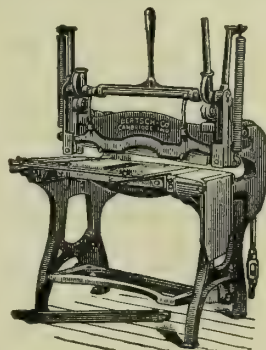
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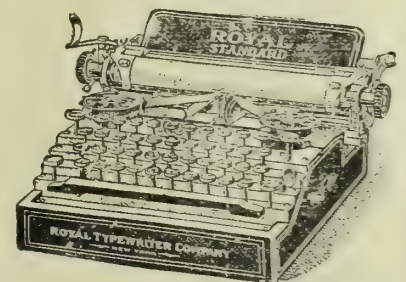
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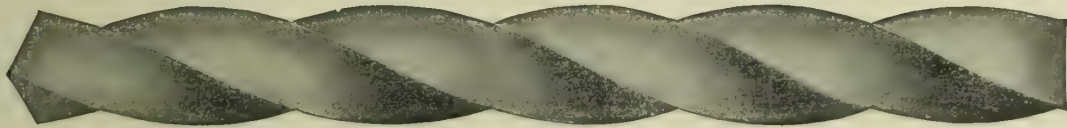
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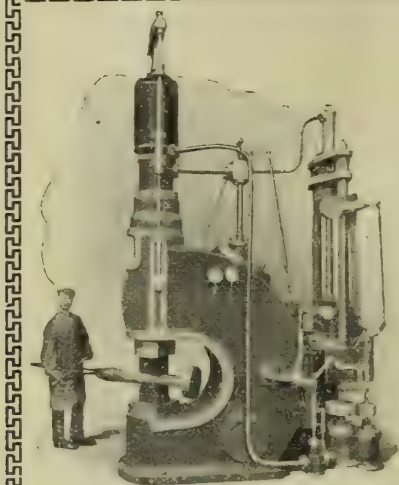
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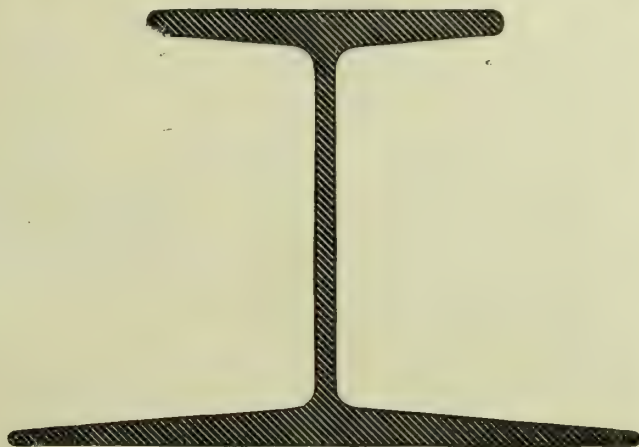
CARNEGIE STEEL COMPANY

PITTSBURGH, PENNA.

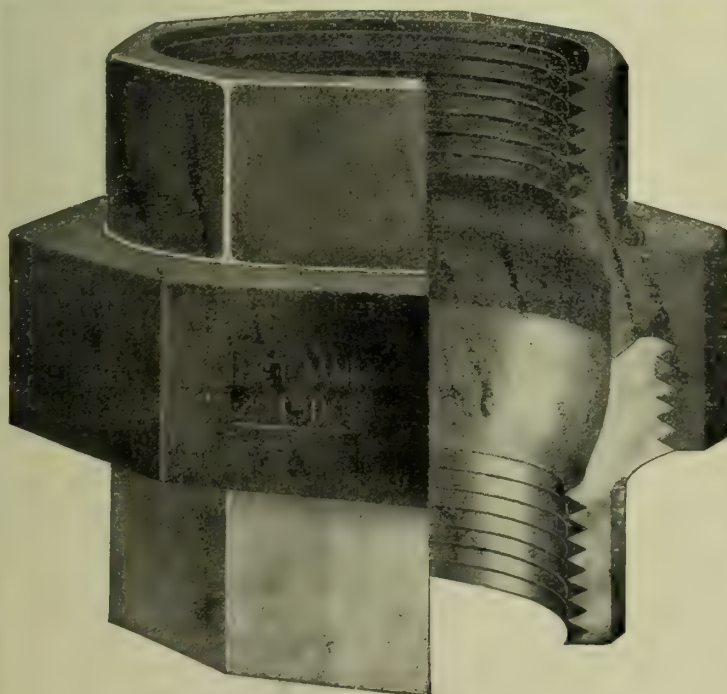
Export Representatives: United States Steel Products Company, New York.



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Steel Tie Section M-21, in use on Coke Ovens.



The union with no inserted parts.

UNITED IT STANDS

Because THE "KEWANEE" UNION

Has brass to iron thread connection and cannot corrode; can therefore be disconnected and reconnected indefinitely.

BECAUSE it has brass to iron ball joint seat and requires no gasket.

BECAUSE it is so simple in construction — ONLY THREE PARTS—no inserted brass pieces to loosen and drop out under steam pressure.

BECAUSE it is the perfect union.

TEST IT—YOU WILL FIND IT STANDS

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General Sales Offices:
Frick Bldg., Pittsburgh, Pa.

District Sales Offices
in the larger cities.

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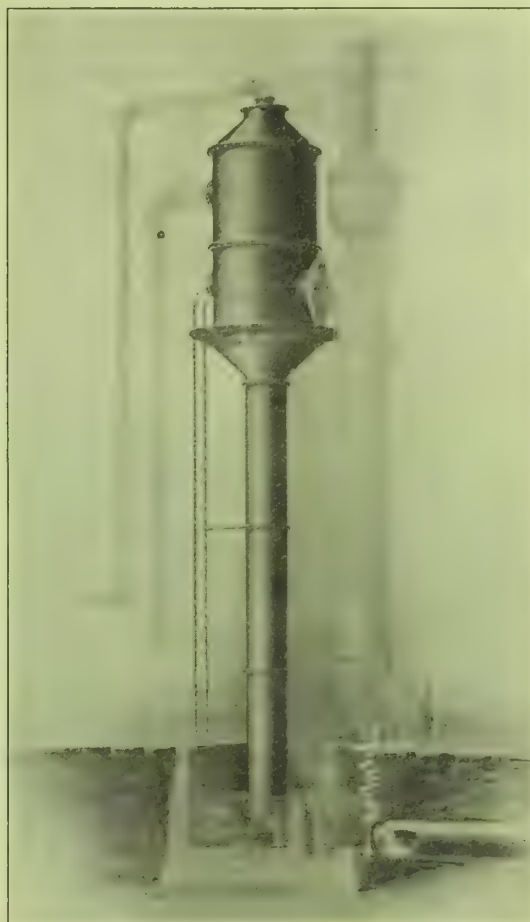
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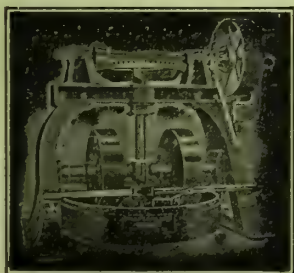
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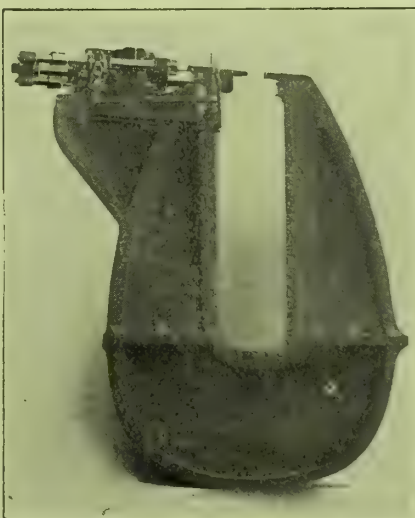


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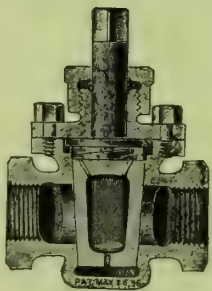
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INDUSTRIAL WORLD

Published Weekly in the Interest of Iron, Steel, Coke and Allied Industries.

43d Year. No. 34.

PITTSBURGH, PA.

MONDAY, AUGUST 23, 1909.

**Ideal
Advertising
Space**

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INDUSTRIAL WORLD

FORTY-THIRD YEAR.

PITTSBURGH, PA., AUG. 23, 1909.

NUMBER THIRTY-FOUR.

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Summary of General Iron and Steel Markets

RAILROADS IN MARKET FOR RAILS FOR 1908—STRUCTURAL AND PLATE MAKERS PREPARING FOR HEAVY FALL RUSH—STEEL BARS ADVANCE, AND SHEETS AND TIN PLATE ARE QUOTED AT HIGHER FIGURES BY INDEPENDENTS—POSSIBILITY OF IMPORTED BILLETS BEFORE CLOSE OF THE SEASON—FOUNDRY IRONS SHOW UNEXPECTED STRENGTH IN EAST AND SOUTH—PITTSBURGH MARKET FIRMER, WITH BUYERS WARY OF NEW HIGH FIGURES—COMPLICATIONS IN SCRAP MARKET—INCREASING PRODUCTION.

THE railroads, so long timid in their buying operations, furnished the keynote for the iron and steel market during the week just ended. Their determination to set the pace in buying was illustrated, when, on the opening of the books of the Steel Corporation for rail orders for 1910 delivery, the trunk lines filed reservations for over 200,000 tons within three days.

This promptness in getting into the market for next year's deliveries is believed to insure steady operation of the rail mills for the winter months. Manufacturers of light rails and trolley track supplies also have information that forecasts a heavy demand by the electric lines through the fall and winter months.

The railroads are mainly responsible for the present rush in structural work, which has filled up some structural companies till the end of the present year; while steel makers are dubious as to the ability of the mills to keep pace with the car shops during the balance of the year on the large bulk of orders filed for rolling stock.

The Carnegie Steel Company during the week advanced its prices on steel bars \$1 a ton, to 1.35c, Pittsburgh—the price the independents have been asking for some weeks. Some of the independ-

ents as a consequence immediately put their quotations to 1.40c. Iron bars advanced to a minimum of 1.50c, in harmony with the quotations made by the Republic Iron & Steel Company two weeks since. Independents have advanced their quotations on both sheets and tin plate in isolated instances, though the leading interest will make no changes in prices for the present year, according to report. Individual tin plate makers advanced quotations 15 and 25 cents, making the new prices \$3.55 and \$3.65 per base box, Pittsburgh. In sheets and tin plate, both the Steel Corporation and the independents are badly behind in deliveries. Cut nails also have been advanced 5 cents a keg, to \$1.75 at mill.

Finishing mills are behind more than two months on deliveries, and are still further handicapped by the rolling mills, in failures to get prompt deliveries. Premiums are paid on billets and plates for prompt shipment.

Imports of billets are declared to be possible. A lot of about 500 tons of small billets has been negotiated for import. Pig iron, taking all points into consideration, is said by Eastern dealers to be 50 cents to \$1 from the importing point. The advance in the domestic market, and the failure of the Eastern

furnaces to keep up with the demand, is responsible rather than the slight tariff reduction. Tin reached the highest point of the year both in New York and London during the week. Spot tin passed the \$30 mark, with \$30.37½ asked, on the New York market, on August 20.

With a continuance of the labor shortage in the coke region, coke touched the \$2 mark, with many operators holding for \$2.35 for high grade Connellsville.

In iron, every center reports that the new high prices are holding. One sale of Bessemer was made in Pittsburgh during the week, through a broker, at \$16.50, Valleys, for last quarter delivery; and another consumer closed for a 3,000-ton lot for 1910 delivery at the same figure. This is a 50-cent advance over previous quotations. In the foundry grades, the Pittsburgh market just about held its own, consumers evidently hesitating still to pay the new prices. Considerable sales of basic were made on the basis of \$15.25, Valleys, for this year's delivery, though for some time furnaces have been insisting that the minimum was going to \$15.50. There is a scarcity of basic in the East. Consumers who found they had not covered their needs for the present year have come into the market for considerable quantities, for some of which they will probably find it necessary to call on the Western furnaces. The Virginia furnaces are in the market again with substantial tonnages, for which they are receiving as high as \$15, furnace, for No. 2X foundry. Malleable is in demand in Chicago. There was some irregularity in the price of Southern iron, due to the release of speculative holdings, but the new price of \$13.50 held generally, while \$14 was asked and received on contracts for next year.

The buying of large quantities of scrap by the Republic, the Pullman and several railroad interests in Chicago aided in making possible a sensational advance on old materials in Pittsburgh. Prices went up 50 cents and \$1, while some dealers were holding for \$1.50 over prices formerly ruling.

The Carnegie Steel Company begun preparations during the week for the blowing in of the last two of its idle furnaces in Allegheny county, and the resumption of the Columbus steel mill. Two of the five idle stacks in the Mahoning and Shenango valleys also are ready to resume.

Pittsburgh District Developments Depicted During the Week

WESTINGHOUSE PREPARES TO PAY PREFERRED DIVIDENDS.

The Westinghouse Electric & Manufacturing Company, although only about eight months out of the receivers' hands, is preparing to pay off the accumulated dividends on its first preferred stock, amounting at the present time to 12½ per cent, and resume the quarterly disbursements on this issue, at the rate of seven per cent a year, which have been discontinued since October, 1907. There is approximately \$4,000,000 of this stock outstanding, which not only carries cumulative dividends of seven per cent a year, but has the right to participate equally with other stock after the same shall have received seven per cent. It also enjoys priority as to assets.

The fact that the Westinghouse company is in a position to pay off the back dividends and resume the quarterly payments on its first preferred stock is regarded in financial circles not only as remarkable evidence of the rapid rehabilitation of the company since the receivership, but of the great improvement that has taken place in the last year in business and industrial conditions throughout the country.

According to representatives of the company, its earnings are now the greatest in its history, amounting last month to the record breaking figure of \$3,000,000. Orders are pouring in, and it is expected that the present month will show even greater earning capacity.

While the annual report of the company for the year ended March 31, recently issued, showed a deficit for the year of \$918,683, it was considered an excellent showing, taking into account the fact that the company had only issued from a receivership a few months before the close of the fiscal year, during which business was at a minimum and there had been a great many expenses to meet. The cost of the receivership alone amounted to \$500,000, and \$700,000 in cash had to be paid to creditors who refused to assent to the reorganization plan and accept securities in lieu of cash for their claims.

It has not been announced definitely just when dividend payments would be resumed on the first preferred stock, but it is believed that it will be at the next quarterly dividend period, on October 10. This will mean a disbursement at that time of 14 per cent in dividends, amounting to about \$560,000 in cash, 12½ per cent being for accumulated dividends to July 10 and 1¼ per cent for the present quarter.

It was on December 5, 1908, that the

receivers for the Westinghouse company appointed October 23, 1907, were discharged, and the company returned to the stockholders, the finances of the concern having been adjusted under a reorganization plan which included the issuing of \$6,431,950 in new assenting stock and \$3,635,000 in convertible bonds to creditors in payment for their claims. Creditors representing \$700,000 in claims refused to accept the plan and were paid in cash. Money for working capital was furnished by the stockholders, who subscribed to approximately \$6,000,000 of new assenting stock at par.

GOVERNMENT PROVIDES NEW TESTER.

The Government is preparing to install, at the Pittsburgh laboratory of the Geological Survey, a giant machine which will record the strain on steel or iron castings, beams, joists or wire cables up to 10,000,000 pounds. It will be the only machine of its kind in the world, and is the invention of Tenius Ohlson, a Swede of Philadelphia.

On a smaller scale is a testing machine that has just been installed at the laboratory of the Geological Survey at the Arsenal, and was in operation for the first time August 19. This will test the supporting power of steel beams or of wire cable to a limit of 600,000 pounds.

In a new building, only temporary, are four great pillars of steel, in pieces welded together, 35 feet in height. Between them are two giant screws operated by electric power. With these a force which will record 600,000 pounds may be exerted. On this instrument all sorts of steel products can be tested.

The screw pillars of this machine are about five inches in diameter. Those of the machine which will record a strain up to 10,000,000 pounds will be 13 inches in diameter. The pillars will be 90 feet high and beams 65 feet in length may be tested.

TO BUY IN OLD PLANT.

Waynesburg, Pa., citizens, at a meeting held in the Green County Courthouse August 17, formulated a plan to raise sufficient capital to purchase the buildings of the Waynesburg Forge Sheet and Tin mills which are to be sold within a few days by the receivers, John H. Strawn and Carl H. Bowlby. The scheme is to form a company composed of Waynesburg men and operate the mills. It is claimed the mills represented an original investment of \$240,-

000, but it was stated the property could be purchased for \$25,000. For \$75,000 it was thought the plant could be bought, repaired and operated for one month. At the present time the only probable bidders for the property are outsiders who would dismantle the mills and remove them. The plant was erected about 10 years ago. It has been idle nearly six years.

BUILDING STEEL BARGES.

The American Bridge Company is doing a great deal of work in steel barge building, which illustrates a new use for steel which has become quite important. The company has just shipped from its Ambridge works, on the Ohio River below Pittsburgh, its largest plant, two car transfer barges, and is following this job with three bulk oil barges. It is an interesting fact that while the company started steel barge building at Ambridge with the expectation that the heavy work would be in building steel barges for coal transport, in which there is an enormous traffic down the Ohio, its heaviest work in steel barge building has been in special lines, which were expected to come later, after the use of steel barges for coal had been well developed. Thus at the start the field of usefulness for steel barges widened beyond expectations.

The car transfer barges, which were shipped last week, are for J. W. Thompson, St. Louis. Mr. Thompson is general contractor for ballasting several hundred miles of road for the Illinois Central, and has a gravel island in the lower Mississippi. The barges are of 14 cars capacity, with two entrance tracks, widening to three. About 400 tons of steel are involved in each barge. There is no wood used in the construction, except for rubbing strips on each side.

The bulk oil barges, upon which work was started as soon as the car transfer barges were out of the way, are three in number, for the Teche Transportation & Fuel Oil Company, operating on the lower Mississippi. These, so far as is known, will be the first all-steel bulk oil barges to be used in inland transportation.

The Prentice-Sturges Construction Company, capital \$300,000, of Scranton, Pa., incorporated at Dover, Del., August 12, to deal in machinery and concrete supplies. The incorporators are: Clarence B. Sturges and Jessie Dimmick, of Scranton, and Dwight S. Prentice, who lives in one of the New England states. The company will install a plant at Scranton.

BOOST IRON PIPE.

The market for cast iron pipe has been boosted the past week by the allotment of 4,600 tons of large sized piping from the city of New York, with a second letting in prospect aggregating 14,000 tons of large sizes before the end of September.

Officials of the United States Cast Iron Pipe & Foundry Company say there are no drops in the amount of business coming in. The plants of the company are now operating on about 90 per cent of capacity. The company's plant at Scottdale, Pa., is running to its full capacity. Recent Eastern orders include 1,800 tons of 30-inch pipe for the city of Newburg, and 850 tons of 6-inch to 24-inch pipe for the city of Syracuse. The latter city has been one of the largest municipal buyers of pipe during the recent low prices.

Although prices for cast iron pipe have advanced slightly during the past month, the advance has not been marked.

New Pipe Line Projects.

Demand for merchant pipe promises to take a substantial impetus in September, though extensive pipe line work is in progress or in contemplation.

The construction of a gas main 400 miles in length, the longest in the United States, to extend from the central gas fields of West Virginia to Baltimore, will be begun by the Standard Oil Company within the next two months. The mains will extend through Calhoun, Upshur, Roane and Lincoln counties, W. Va., where the Standard has extensive areas of virgin gas territory.

Referring to current reports that the Ohio Fuel Supply Company, Columbus, O., will construct additional pipe lines, J. M. Garard, general manager of the company authorizes the following statement: "We are constructing an 18-inch pipe line from Sugar Grove, O., to Roane county, West Virginia, crossing the river at a point near Ravenswood. The length of the line will be about 100 miles and the cost will exceed \$1,000,000. The capacity of this pipe line will be about 45,000,000 feet of gas per day."

With a capital stock of \$1,000,000 a charter was issued in West Virginia on August 12, to the Interstate Gas Company of Pittsburgh, whose chief works will be in Lincoln county, West Virginia. The incorporators are T. H. Guffey, N. F. Clark and other Pittsburgh capitalists, who have a large area of gas territory in Lincoln and Wayne counties under lease. These holdings were secured by the Pittsburgh parties in connection with the deal between the Columbia Gas & Electric Company and the Standard Oil Company to pipe their

product to Pittsburgh and also to supply natural gas to Baltimore.

TO BUILD NEW TOWN.

It has been definitely decided that the new shops and yards of the Western Allegheny railroad are to be located at Queen Junction, where connection is made with the Bessemer & Lake Erie. It is announced also, that the company will begin work soon on the building of the extension from Kaylor, Pa., to Reidsburg, where connection is to be made with the Franklin & Clearfield division of the New York Central. The Western Allegheny was built about four years ago by Pittsburgh capitalists, and for the first 18 months was operated as a part of the Bessemer & Lake Erie.

A new industrial town is to be built near Queen Junction. Houses are to be built for the 800 employes of the American Iron Steel Bar & Skelp Company; 200 employes of the Roberts Boiler & Tube Works; 150 employes of the Tin Plate & Stamping Company. The Keystone Tube Company has awarded contracts for new buildings and equipment for the Queen Junction plant. Arrangements are being made for opening Silica sand works about a mile east of Queen Junction along the Western Allegheny railroad.

TO ADOPT STEEL TIES.

Officials of the Aliquippa & Southern and the Monongahela connecting railroads, owned by the Jones & Laughlin Steel Company, are considering the advisability of using steel cross ties in the main line track. The Jones & Laughlin lines are used almost exclusively for handling freight between its plants. On account of the increased cost of timber and the statement made some time ago that the Jones & Laughlin Company will manufacture steel cross ties, it is believed that steel cross ties will be used to a large extent in the company's lines in the future.

COMPRESSOR AND PUMP SALES.

Pittsburgh representatives of Laidlaw-Dunn-Gordon & Company, have received contracts for installing six compressors for the H. C. Frick Coke Company. The compressors are of the cross-compound twin tandem type, with capacity of 1,000 cubic feet of air per minute at a pressure of 1,000 pounds, and so arranged that either side can operate independently; a special-designed 3-cylinder crank and fly wheel, and a compound auxiliary pump to operate the elevators in the Oliver building, Pittsburgh; and two 2-stage air compressors driven by 100-horsepower power motors for the Iowa Gulch Mining Company, Leadville, Colo.

OILING SYSTEMS ORDERED.

The growing importance of efficient lubrication for the care of costly heavy duty engine installation has received such serious attention at the hands of the engineering corps employed by the steel combination and other interests controlling large power plants, as has resulted in a changed attitude toward oiling systems. Lubrication is at present considered one of the important features of a power plant. Orders for important oiling systems have been placed with the Pittsburgh Gage & Supply Company, Pittsburgh, by the Illinois Steel Company, for its Aliquippa, Pa., plant; the Pfau Manufacturing Company, Cincinnati, Ohio, and the DeForest Company, Niles, Ohio.

LABOR TROUBLES END.

The N. & G. Taylor Company, of Philadelphia, has signed the wage scale of the Amalgamated Association of Iron, Steel and Tin Workers and has resumed operations. This concern is the last of the independent tin plate establishments to sign the Amalgamated scale. Among the sheet mills the Berger Manufacturing Company, Canton, O., with 21 hot mills continues an open shop. The La-Bell Iron Works, Steubenville, O., and the Youngstown Sheet & Tube Company, are also making sheets in open shops.

MOTIVE POWER FOR HAITI.

The H. K. Porter Locomotive Company, Pittsburgh, has received orders for five locomotives for the Central railroad, of Haiti. The engines are of the narrow gauge type, one has cylinders 10x16 inches and four have cylinders 13x18 inches. The company also has orders for two locomotives to be shipped to Cuba, standard gauge, one with 12x16-inch cylinders and the other 16x24-inch cylinders; and an order for three 4½x8-inch cylinder locomotives to be shipped to South America.

FIREPROOF WAREHOUSE.

The Raymond Concrete Pile Company, New York and Pittsburgh, on August 6, completed the work of driving 208 piles in 13 days for the foundations of the new warehouse being constructed by the Marietta Chair Company, Marietta, O. The building is to be 90x48 feet and seven stories high. Foundations are being constructed by the Concrete Construction Company, and material for fireproof construction are being furnished by the Consolidated Expanded Metal Company, Pittsburgh.

FULL SPEED AHEAD FOR CARNEGIE COMPANY.

The Carnegie Steel Company management issued orders during the week just ended for the resumption of the Columbus (O.) plant by September 1. The plant, which has been idle two years, during the past month has been undergoing repairs and changes. The plant consists of two blast furnaces, two Bessemer converters, blooming and sheet bar and small billet mills. With it in operation, the Carnegie Steel Company will have running all of its 23 rolling mills and steel works, including the Schoen steel wheel plant, for the first time in about two years. It now has 51 out of 59 blast furnaces blowing and with the two Columbus stacks, the Edith and Neville Island furnaces, which are being prepared for activity, the company will soon have running 55 out of 59 furnaces. The idle furnaces will then be the isolated Zanesville, Steubenville and Niles stacks, together with one Carrie, which is out for repairs.

Preparations are being made by the Carnegie Company to let contracts for more new equipment for the enlarged Slick car wheel plant at Homestead. Only about \$100,000 will be expended at the present time in enlarging the venture from an experimental to a commercial basis. The new Slick wheel will be on the market early next year.

RECORD FLANGING PRESS.

The R. Munroe & Sons Manufacturing Corporation, Pittsburgh, has placed an order with R. D. Wood & Company, Philadelphia, Pa., for what is claimed will be a larger hydraulic flanging press than any so far installed in the Pittsburgh district. It will be used for pressing out boiler and tank heads and other special work. Its capacity will take in plate work $\frac{3}{4}$ -inch thick and 10 feet in diameter. The company manufactures the Munroe patent water tube boiler, builds tanks, plate work, etc., but is arranging its plant for larger and heavier work. A 10-foot 6-inch gap riveter is also being added. Recent shipments of complete work include four 40-foot cement dryers for the Universal Portland Cement Company, Universal, Pa.

STEEL FOR NEW DREADNAUGHTS.

In the letting of the contracts for the new Dreadnaughts, Wyoming and Arkansas, bids for which were opened at Washington August 18, William Cramp & Sons, of Philadelphia, were the lowest bidders. They submitted two bids, one at \$4,450,000 and another at \$4,475,000. Only one ship can go, however, to any one firm of builders, and the New

York Shipbuilding Company, of Camden, N. J., will build one of them at \$4,675,000.

Bids for the armor plate were also received, but the contracts will not be awarded immediately. The Carnegie Steel Company, Bethlehem Steel Company and the Midvale Steel Company each presented a bid of \$420 a ton for the 11,486 tons of class A armor to be used. There are other classes of armor of which about 1,500 tons will be used. The lowest bidder for 900 tons of class B was the Midvale company at \$415 a ton, and the Carnegie Steel Company bid \$460 a ton for 360 tons of class C. For the 130 tons of class D and the 98 tons of class E the Bethlehem company bid \$587 and \$508, respectively.

When the awards for the armor plate will be made has not been announced, but it may be in the near future.

Bids for the vessels were made under two heads, class one being according to the navy department's plans and class two the department's plans as to hull and equipment, but with machinery suggested by the bidder. As a result there were two propositions for the installation of turbine coupled with reciprocating engines, reciprocating engines and turbines combined with electric motors.

The speed promised generally was 20½ knots under both classes, but the New York Shipbuilding Company offered to build a vessel at 20¾ knots at \$4,750,000 under class one, and at \$4,875,000 under class two. Another bid by the same company was for a 20½ knot vessel at \$4,780,000.

Bids submitted by the Newport News Dry Dock & Shipbuilding Company were, class one, \$4,790,000, and two bids under class two at \$4,680,000 and \$5,010,000 respectively.

Eight bids came from the Fore River Shipbuilding Company, all under class two, and ranging from \$4,747,000 to \$5,097,000.

NEW POWER PUMPS.

H. S. Budd, Pittsburgh representative of the D'Olier Engineering Company, reports the sale of two boiler feed pumps to the Southern Cambria Railway Company, Johnstown, Pa., also a compound and a duplex pump for the American Water Works & Guarantee Company, Butler, Pa.

AIR COMPRESSOR ORDER.

The Crane-Best Company has placed an order with the Ingersoll-Rand Company for an electric-driven duplex compound air compressor, with a piston displacement of 600 cubic feet of free air per minute. The compressor will be installed in the company's new plant in course of construction at Oakmont, Pa.

PLANT IN OPERATION.

The National Roll & Foundry Company, Pittsburgh, began operations by starting one of the air furnaces at its plant at Avonmore, Pa., on August 21. The plant is equipped with two 15-ton air furnaces for the manufacture of rolls from charcoal iron, and two 50-ton cupolas.

Plans have been made for the erection of open hearth furnace which, when completed will equip the company for the manufacture of steel castings.

TO BUILD THIRD FURNACE.

The William B. Pollock Company, Youngstown, O., has been awarded the contract for building the new No. 3 stack which the Youngstown Sheet & Tube Company will shortly erect at its plant. The new furnace will be of the large type of Nos. 1 and 2 recently completed and will have a daily capacity of about 500 tons. About 1,500 tons of shapes and plates for the new stack will be furnished by the Carnegie Steel Company.

LARGE REVERSING VALVES.

Walter O. Amsler, engineer, Wabash building, Pittsburgh, has been awarded a contract for the installation of five 36-inch combination and 40-inch air chamber, reversing valves, to be used in the operation of open hearth furnaces, by the Maryland Steel Company, at its Sparrows Point plant. The valves are of a special design, and will weigh 45,000 pounds each.

FOR ALIQUIPPA MILLS.

The Shelby Tube Company's plant at Elwood City, Pa., is being operated double turn, with orders ahead to the capacity of the plant for several months. The annual output of the plant is 10,000,000 feet of seamless tubing.

The Standard Engineering Company, Elwood City, is operating its plant at capacity. The company is working on the equipment of a 30-mill plant for the Jones & Laughlin tin mills to be built at Aliquippa, Pa., and several other important orders.

TO START FRANKLIN PLANT.

The American Steel Foundries Company has recently completed improvements to its Pittsburgh plant, which will increase the capacity from 400 to 700 tons per month. The shops are operating steadily, with indications of reaching the maximum soon. The company is also arranging for a resumption of operations at its Franklin, Pa., plant about September 1.

HEAVY CASTING BRAZED.

The Pittsburgh Reinforced Brazing Company, on August 16, repaired a break in a heater box for the Pittsburgh Railway Company without removing the casting from its location in the power house. The break was in a casting about 2x3 feet, and after being brazed it withstood a test of 250 pounds pressure without showing any indications of a fracture.

NEW AIR COMPRESSORS.

J. W. McCartney, Pittsburgh representative of the Bessemer Gas Engine Company reports the sale of a 70-horse power gas engine and compressor to the Consolidated Glass & Lamp Company, Coraopolis, Pa., and a large compressor which was shipped to Kansas, to be used in the gas field in that State.

INCREASING OPERATIONS.

The Sharon Steel Hoop Company, Sharon, Pa., is operating its plant at 75 per cent of capacity. The company manufactures billets, sheet bars, hoops, bands and cotton ties. The company expects to be operating at capacity in a few weeks.

PLANT NEARS COMPLETION.

The West Penn Steel Company's new plant at Brackenridge, Pa., will be in operation by October 1. The new plant will consist of an 80-ton open hearth furnace and six hot mills for rolling special sheets for electrical and other high-grade purposes.

BRICK PLANTS BUSY.

E. S. McLean & Son, manufacturers of fire brick and furnace lining, Fulton building, Pittsburgh, are operating their several plants at capacity with orders to keep them running at full time for several months.

BUILDING HEAVY MACHINERY.

The H. P. Gazzam Machine Company, Pittsburgh, has received orders for heavy machinery which will keep the plant in operation for several months. The company manufactures a line of special machinery.

ERECTED NEW BUILDING.

The American Lead Company, manufacturers of lead pipe and special shapes, has erected a new steel frame building at 3118 Penn avenue, Pittsburgh, and is installing machinery for increasing its production.

OBITUARY.**CAPTAIN HERMAN P. SCHUYLER.**

Captain Herman P. Schuyler, assistant treasurer of the General Electric Company, and one of the best known credit men in this country, died on August 14, at his home in Albany, N. Y. He was 67 years old. In 1870 he entered the sales department of the Troy Steel & Iron Company. In 1887 Captain Schuyler went to New York city to become private secretary of the late H. H. Rogers, of the Standard Oil Company. Three years later he was called to Philadelphia, to become head of the sales department of the Wellman Steel & Iron Company, at Thurlow, Pa. From this position his marked ability won for him the position of assistant treasurer, in charge of credits, of the General Electric Company, in 1893, which position he retained until the day of his death.

* * *

JOHN W. MAYWORM.

Joseph W. Mayworm, who for nearly 12 years has been assistant postmaster of Detroit, died August 10, after a very brief illness from heart disease. Mr. Mayworm was born in Detroit in 1851, but removed to Houghton, Mich, where, after beginning his business career, he became secretary of the Lake Superior Iron Company. From 1883 to 1896 he was secretary of the Riverside Iron Works, in Detroit, remaining in that position until he entered the employment of the government.

FIRES AT INDUSTRIAL PLANTS.

Newark, N. J. — Copper rolling mills of Hendricks Brothers, which were started over a century ago and were situated at Soho, New Jersey, a section of Belleville, were badly damaged by fire August 13. The rod mill was entirely destroyed and some other unimportant buildings. Loss approximates \$50,000.

* * *

Fair Oakes, N. Y. — Cold storage plant, grain elevator and machinery warehouse of Lewis R. Wallace destroyed August 16. Loss, \$25,000.

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Roxbury, Conn. — Entire plant of New England Quartz Company destroyed by fire August 13. Loss is about \$150,000.

* * *

Saratoga, N. Y. — The plant of the Empire Graphite Company at Porter's Corner was burned August 13. Loss \$100,000.

* * *

Buffalo, N. Y. — Fire did \$100,000 damage to the Jacob Dold Packing Company's plant August 12.

Akron, O. — Loss on plant of Buckeye Rubber Company, August 12, 30 per cent chiefly on stock. Insurance \$378,000.

* * *

Rochester, N. Y. — Factory of Rochester Mattress Company was wrecked August 15, with \$5,000 loss.

* * *

Pittsburgh — Warehouse and stock of Ft. Pitt Bedding Company, Northside, damaged \$25,000, August 17.

BOILER MEN WANT BETTER STEEL.

Insistent demand for a steel fit for use in the manufacture of safe high-grade boilers was the substance of a resolution adopted by the American Boiler Manufacturers' Association in convention at Detroit, August 14. The resolution complains that for years boiler manufacturers have vainly tried to have the manufacturers of steel furnish them with material which could tend to minimize explosives. The convention was attended by Commander Robert S. Griffin, United States Navy, who assured the boiler men of the sympathy of the engineering department in their efforts to improve standards.

Specifications adopted by the American Boiler Manufacturers' Association in 1889 placed the limitations as to phosphorus 0.04 per cent and sulphur 0.03 per cent. These specifications were adhered to until 1898 when the association decided to improve them, as it had been found that the maximum of phosphorus and sulphur was rarely reached in the material being supplied by the manufacturers of boiler plate. The new requirements were adopted by the American Society for Testing Materials, under protest from the steel makers and a compromise was effected in 1906 by which the steel manufacturers accepted the specifications in-so-far as they applied to the American Boiler Manufacturers' Association, maintaining its standard specifications of 1903 as the basis for general trade.

The committee's report on this controversy closes with this statement:

In view of the action of the steel plate manufacturers and the exercising of their influence as to our compromise with the committee of the American Society for Testing Materials, your committee deems it proper to confess that the agreement with the committee of the American Association of Steel Manufacturers, published to our membership on December 22, 1905, on page 164 of the proceedings of the seventeenth annual convention, has become invalidated, and to recommend the re-adoption of the original specifications of the American Boiler Manufacturers' Association of 1899, as to sulphur and phosphorus, these agreeing with those of the United States Army department for the same class of steel.

Review of Industrial News From All Sections of the Country

MILL MOTORS FOR GARY.

The Crocker-Wheeler Company has recently booked several large orders for direct current apparatus. One of these from the Indiana Steel Company calls for 70 mill motors, totaling about 2,400 H. P. This order is an addition to the 11,000 H. P. of Crocker-Wheeler motors employed at the present time by this company. Another order from the Gould Paper Company, of Lyons Falls, N. Y., calls for electric drive for a new paper-making machine which they are about to install. A sale has been made to J. M. Kohler Sons Company, Sheboygan, Wis., of one 750 KW, 250 volt D. C. generator. The King Bridge Company, Cleveland, O., recently placed an order for one 150 KW, compound wound, 250 volt generator to be used for supplying light and power. Another sale made to the American Lace Manufacturing Company, Elyria, O., covered one 100 KW, 250 RPM generator. The Bethlehem Steel Company has recently added to their 8,800 H. P. of Crocker-Wheeler motors, by an order for a 225 H. P. compound wound motor, to be installed at their Saucon plant. An order received from Beadleston & Woerz, New York City, covers 187 H. P. in compound wound 115 volt motors and one 150 KW, 125 volt compound wound generator.

HOW SCHWAB WILL SPEND \$5,000,000.

On top of the \$15,000,000 Charles M. Schwab has put into the Bethlehem plant since he has become the ruling spirit in the enterprise, he is now drawing plans for fully \$5,000,000 additional expenditure.

Mr. Schwab's oft expressed doctrine has been that when a plant quits making extensions it is ready to go into decline. He announced in Philadelphia a few days ago that the detailed plans for the immediate improvements at the Bethlehem plant would be ready to announce within a fortnight. "There will be," he said, "a new beam mill to roll smaller structural steel—six to 12 inch beams—so that I can run the original mill on larger sections alone, 12 inches and above."

"You refer to the Grey process mill in which structural steel columns are rolled complete, so eliminating the necessity of building up by riveting together angles and plates rolled separately?"

"Yes. We have found a ready demand for this new structural steel, and the present necessity for rolling small sections handicaps the larger work for

which the new mill was planned. The demand is so much beyond our capacity that I shall tear out my standard structural mill, abandon entirely the manufacture of old standard columns, and put the new six to 12 inch plant on the same ground.

"I shall also double my open-hearth steel capacity at the Saucon plant, and will build two new blast furnaces besides the two which have been rebuilt, making four blast furnaces in all. One of the things not yet fully decided is whether to put these new furnaces on the ground occupied by the present old furnaces, or to build them somewhere else."

The two blast furnaces just rebuilt, one of which has just been put in operation, are in the old part of the Bethlehem plant, and are each of 600 tons daily capacity. The furnaces which Mr. Schwab may demolish to make way for the two big ones to be built, are three, each of 200 tons capacity. The present open-hearth plant at the Saucon Works, which is to be duplicated, consists of ten 60-ton capacity furnaces.

NEW NAIL PLANT.

The Ward Nail Company, of Youngstown, has increased its capitalization from \$10,000 to \$50,000. The company was organized some time ago with David Tod as president; A. B. Stough, of Struthers, vice president; Louis Baldwin, of Struthers, secretary; D. I. Ward, manager. It will manufacture nails by a new machine process invented by Mr. Ward, which it is expected will greatly cheapen the cost. The capital stock was increased in order to commence operations. Manager Ward announces that by the first of the month one of two sites for a factory in Youngstown would be secured. Nails may be placed on the market by the first of the year.

WORK ON LOCK NO 25.

The site of the new lock and dam the Government will build in the Ohio River above Gallipolis has been decided on and preparations for the drilling for the foundation are now being made. The lock and dam will be No. 25. It will be located at Wolfs Bar, nine miles above Pomeroy, O. The cost is fixed approximately at \$1,000,000, though it is conceded by several of the engineers that it will run almost half again that amount.

This is the first of the Government locks to be erected above Gallipolis. The locks will be much wider than those already constructed.

EDISON PERFECTS ROCK BREAKER.

News comes from New Village, N. J., that Thomas A. Edison has perfected a machine that will reduce a boulder weighing from 12 to 14 tons and measuring seven or eight feet in width into a pile of six-inch rocks suitable for smaller rollers to crush into road-making material for other uses. Mr. Edison spent most of the time of his visits to the cement works at New Village, in experimenting and building the machine which weighs nearly 40 tons. It is in operation at the New Village cement mills.

Inside of the machine are two large rolls, seven feet wide and six feet in diameter, which are enclosed in a gigantic hopper. These rolls have octagonal faced mandrels, or plate beds, on which the molars or grinders are fastened with bolts that weigh from 10 to 30 pounds each. These rollers are attached to a pulley which is connected with a belt to a large motor with great horsepower.

A terrific speed is generated, and the railroad freight car is backed up to the hopper, on which are usually two 14-ton boulders. A magnetic lifting contrivance is lowered over them, a clutch grips the heavy rock and then a button is pressed and a lever pulled. The stone is dropped by the shutting off of the magnetic currents and falls into the hopper. There is a terrific roar, and the boulder is crushed.

It is said that the new process will cheapen the cost of cement materially.

NEW STORAGE BATTERY.

Cable advices from Christiania, Sweden, state that an inventor named Gross, living there, says that he has constructed an electric storage battery which solves the problem which long has occupied the attention of Thomas A. Edison. Swedish experts consider Gross's invention of high importance.

NOTES OF NEW CONTRACTS.

In the construction of the foundations for the railroad terminal, being built by S. Pearson & Son, Limited, at Vera Cruz, Mexico, approximately 3,000 Raymond concrete piles will be employed.

The C. O. Bartlett & Snow Company, of Cleveland, are in receipt of an order from the Philadelphia and Reading Coal & Iron Company, Pottsville, Pa., for one Greene self-dumping car haul, to be installed at the Burnside Colliery; capacity, two tons per minute.

ALUMINUM MERGER.

The consolidation of five of the largest aluminum casting plants of the United States has been effected by which the Aluminum Casting Company, Cleveland, acquired the properties and business of the Allyne Foundry Company, Cleveland, Detroit and Buffalo; the Syracuse Aluminum & Bronze Company, Syracuse; the Eclipse Foundry Company, Detroit, and the foundry department of the United States Aluminum Company, New Kensington, Pa. Cleveland capital and Cleveland men are important factors in the transaction. It is estimated that the annual consumption of the new concern will be between 7,000,000 and 8,000,000 pounds of aluminum. The company is incorporated at \$800,000.

The first step was taken a few weeks ago when the Aluminum Castings Company of Cleveland, Ohio, was incorporated with a capitalization of \$10,000. This was followed the past week by the filing with the Secretary of State of Ohio of a certificate increasing the capitalization to \$800,000.

E. E. Allyne, president of the Allyne Brass Foundry Company, is president of the new company; W. R. King, of Buffalo, is vice president, and C. L. Ackerson, of Syracuse, is secretary.

The new company will do a general business in the manufacture of aluminum, brass and bronze castings. In addition to the operation of the plants that are being consolidated a new foundry will be erected at once in Detroit, 225x260 feet. Additions are now being made to the plant of the Allyne Company, in Cleveland, doubling its present capacity.

TIE PLATES VS. STEEL TIES.

The incident that the Illinois Steel Company has already this year booked 40,000 tons of tie plates and is figuring on an inquiry for 15,000 tons illustrates the importance of tie plates from a tonnage standpoint, says the "American Metal Market," in recent issue. There are several other important tie plate manufacturers, the output being something like a quarter million tons a year.

The tie plate and the treated wood tie are opposed to the all-steel tie. The ordinary wooden tie, as formerly used, is doomed. There is not enough timber available to keep up with the demand, as the life is short and the rail support is being found unsatisfactory. Railroad engineers have come to realize that a problem is presented which not so long ago was hardly considered that any kind of a support, so long as it makes the track look straight, is not sufficient for a steel rail. Rails break and it is not necessarily the fault of the steel. Of course

if the steel had been strong and tough it would not have broken. The rail mills will make stronger and tougher rails, but curiously enough they want more money for them, and accordingly the rails are being better supported in the track.

The new thick flange rail section involves a slight narrowing in the width, the proper body, to balance the head in rolling, being obtained by narrowing the flange and increasing the total amount of metal in it. This makes a tie plate still more necessary, and the tie by giving a much larger bearing surface between metal and wood than is obtained by laying the rail directly on wood, decreases wear on the tie and keeps up the track.

The combination of a treated tie and a tie plate costs much less money than an all-steel tie, and while it will not last as long, it will last long enough to make the depreciation or replacement charge small. With a wooden tie having to be replaced every five or six years the annual charge is very high. To double the life does more than cut the charge in half, and this appears to be good enough, considering the much higher interest charge which would be involved in the longer lived all-steel tie.

The probability is that tie plates will furnish a much larger tonnage to the steel trade than steel ties, because they will be adopted rapidly, the steel tie promising only slow adoption.

ELECTRICAL INSTALLATIONS.

Among recent sales of Allis-Chalmers electrical apparatus, exclusive of combined generating units, are:

Delaware, Lackawanna & Western Railroad, Hampton Power plant, Scranton, Pa., one 1,500 KVA, O. F. W. C., 3 phase, 60 cycle transformers, 4,150-2,200 volts; Pocohontas Consolidated Collieries Company, Switchback, W. Va., one 175-H. P., 2,080 volt, 3 phase, 60 cycle induction motor; Toledo & Indiana Railway Company, Toledo, O., one 400-KW. rotary convertor, 500 RPM., 25 cycle, 3 phase, 600 volts D. C., with three 150-KVA., O. F. S. C. transformers, 3,200-375 volts, together with switchboard; Illinois Steel Company, Joliet plant, one 1,250-KVA synchronous frequency changer, changing from 3 phase, 2,200 volts, 60 cycle, to 3 phase, 6,600 volts, 25 cycle, 300 RPM., one 200-KW synchronous motor generator set, 3 phase, 25 cycle, 6,600 volts, 2,200 volts D. C., together with switchboard; Cambria Steel Company, Johnstown, Pa., one 500-KW rotary convertor, 3 phase, 25 cycle, 575 volts D. C.; National Casket Company, Pittsburgh, Pa., 24 induction motors, 440 volts, 3 phase, 60 cycle, aggregating 275 H. P.

PUBLIC WORKS CONTRACTS.

Among the public works contracts awarded during the week just ended, are the following:

Wheeling, W. Va.—New 20,000,000-gallon pump at City water works, to Allis-Chalmers Company, at \$140,000. Other bids submitted were: Hoover-Owens-Rentschler Company, Hamilton, O., \$183,700; William Todd & Company, Youngstown, \$160,000; Holly Manufacturing Company, Buffalo, N. Y., \$141,655; Bethlehem Steel Company, South Bethlehem, Pa., \$142,800. R. D. Wood & Company submitted a bid but withdrew it.

Harrisburg—New storage house and workshop at the State Arsenal to J. P. Brenneman, of Lancaster, for \$37,537.

Youngstown, O.—Spring common viaduct structural work to the Fort Pitt Bridge Company, Pittsburgh, Pa.; bid for entire structure, \$59,060 with buckle-plate floor, or \$56,630 without.

Plans have been completed and presented to the Ohio State Board of Prison Managers for a power plant which will furnish light for the penitentiary, and the Institution for Feeble-Minded, in Columbus; cost, about \$250,000.

TO BRIDGE THE OHIO.

Reports from Wheeling, W. Va., say a company has been formed, consisting of local people, known as the Bellaire, Benwood & Wheeling Bridge Company. The promoters of the new enterprise are Charles A. Bowers, E. B. Bowie, William A. Gilliland, H. W. Campbell and George A. Blackford. It is the purpose of the new company to construct a bridge across the Ohio River at Benwood, and application will be made in a short time for the right to go ahead with the structure. The bridge will possibly serve as a connection for traction service between Bellaire and Benwood.

NEW ALABAMA MILLS.

The Southern Iron & Steel Company has awarded the contract for an engine of 3,000 horsepower capacity to the Allis-Chalmers Company for its new rod wire and nail mills at Gadsden. The engine will cost in the neighborhood of \$45,000. Over 50 men are working at the company's new plant, and a switch engine has been put in service and a track is being laid to the site of the new plant. As soon as the track is completed material for the new structure will be delivered and the work of construction will be pushed as rapidly as possible. The company has resumed operations at the coal mine at Virginia City, near Bessemer.

GOVERNMENT TO SUPERVISE STEEL RAIL TESTS.

To secure a standard of dependable steel rails, capable of carrying the heavy equipment of the modern railroad and accommodating the tremendous traffic with the minimum danger of wrecks, is the object of an arrangement that has been entered into by the government, the railroads and the steel rail manufacturers.

Following an important conference held at the Bureau of Standards on August 13, the Federal Government has undertaken to supervise from a scientific standpoint a series of tests of steel rails to be made under the general direction of a committee of the American Railway Engineering and Maintenance of Way Association, the object being to raise the standard of rails and thereby promote the public safety. Those taking part in the conference were Assistant Secretary of Commerce and Labor Ormsby McHarg, Dr. S. W. Stratton, director of the Bureau of Standards; J. A. Atwood, chief engineer of the Pittsburgh & Lake Erie Railroad; T. H. Johnson, consulting engineer of the Pennsylvania Railroad Lines West of Pittsburgh, and A. W. Thompson, chief engineer of maintenance of way of the Baltimore & Ohio Railroad.

While the Government has no intention of attempting to dictate an arbitrary standard of rails, even if it should have the authority to do so under the law, it is hoped to arrive at a standard that will be observed by all roads and all manufacturers of rails.

The committee of railroad engineers is planning a series of tests of steel rails with two testing machines of different types, one of which has been installed at the plant of the Maryland Steel Company, while the other is located at the Pennsylvania Steel Company's plant. While these machines are built on different principles, they are intended to reproduce as nearly as possible practical operating conditions, especially with respect to the abrasion of rails, except that the machine is so manipulated that the wear and tear of several months of actual service can be reproduced in a few days.

In carrying out the tests that have been projected, the railroad men's committee has secured the co-operation of the leading steelmakers of the country, and at the conference just held Director Stratton also agreed to act as an associate member of the committee. The co-operation of these three elements, it is believed, will result in a series of tests that for thoroughness and accuracy will excel anything of the kind heretofore attempted either in this country or abroad.

The steelmakers have given much attention to the subject of producing better rails, but have not possessed the facilities nor the technical knowledge to test their rails under practical conditions. The railroad men, while in position to make tests under service conditions, have lacked the opportunity to supervise closely the chemical and physical tests carried on by the steelmakers in the production of rails. Under the agreement reached with Director Stratton the facilities of all the appropriate laboratories of the Bureau of Standards will be placed at the disposal of the committee, and every feature of the prospective tests will be supervised, checked and recorded by the most accomplished Government experts in their several lines. Meantime, the price the railroads are willing to pay will probably largely govern the quality of rails, in the future just as in the past.

PLANTS GO TO SALE.

At San Francisco, the Fulton Iron Works have been ordered sold by the sheriff to pay a judgment of \$76,302 due to the heirs of the Chandler estate. Richard Chandler, who died recently, loaned the Iron Works various sums on mortgage and on his death his heirs demanded payment, which the corporation was unable to do.

Press reports from Akron, O., say that officers of the Chanute Cement & Clay Product Company, a \$5,000,000 company, received information that the half-finished plant of the company at Chanute, Kan., has been placed in the hands of a receiver. The Court action followed the filing of mechanics' liens aggregating more than \$8,000 against the Summit Construction Company, organized to sell the Chanute Company's bonds and build the plant. The Chanute Company was organized by John F. Townsend, who is now in England with broken health. Senator Dick was affiliated with him.

GOVERNMENT PROPOSALS.

Proposals are being asked for by the Isthmian Canal Commission, Washington, D. C., and the United States Engineers' office, Farmers Bank building, Pittsburgh, for engine lathe, punching and shearing machine, boring and turning mill, steel casting, malleable castings, repair parts for flat and dump cars, air compressor plant to be installed at Lock No. 1, Monongahela river, and proposals for the purchase of old iron and steel, including abandoned locomotives, cars, tanks, boilers, girders, machinery, etc.

THREAT OF CAR FAMINE.

On August 14, the number of idle cars on lines in the United States and Canada, as shown by the bulletin of the American Railway Association had decreased 36,181, or about 15 per cent, leaving 207,173 still out of service. The reduction is the greatest since last September, and brings the surplus 74,448 below what it was at that time.

An increased demand for box and coal cars reduces the surplus of that class of equipment 29,765, and of flat cars, 2,986.

Arthur Hale, chairman of the committee on relations between railroads, admitted that if such large reductions in car surpluses continue the country will face a severe car shortage before October.

Chairman Martin A. Knapp, of the Interstate Commerce Commission, is quoted as saying that he doubts whether the expansion of the railroad equipment and trackage will be shown to have kept pace with the increase of the country's business by the end of the present year. He says he expects to see tonnage records for 1907 broken.

The Pennsylvania, Baltimore & Ohio and other Eastern roads have many cars stored in the yards and counted as surplus rolling stock that are in reality already consigned to the bonfire for scrap, so that surplus car figures will be deceptive until the car building companies begin deliveries on the contracts now under way.

ACTIVITIES IN THE WEST.

The Crescent Nail Mills, owned by Hartman, Hay & Reis, Belleville, resumed operations August 16 with a full complement of men, after a suspension of several months, during which improvements and repairs have been made.

The Columbia Wire & Iron Works Company, of Portland, Ore., is planning new additions.

The Kinnel Edge Tool Company, of Columbus, O., has taken over the business of Kinnel Brothers.

The Warner Fence Company, of Ottawa, Kan., is building a new plant at Pueblo, Col.

FOUNDRY EXTENSIONS.

Included in the projected extensions at the Pullman, Ill., works is a foundry and machine shop that will cost \$100,000.

The Domestic Engine & Pump Works, of Shippensburg, Pa., is planning to build two buildings to replace those recently destroyed by fire.

PERSONAL.

Charles T. Fairbairn, manager of the Lake Superior iron mines of the Republic Iron & Steel Company, has been promoted to the position of general manager of the corporation's mines. The company has iron mines in the south and coal mines in the East, in addition to its several Lake Superior properties, and Mr. Fairbairn will have charge of all of them. His new duties will bring him to Pittsburgh, where he will take up his residence the first of next month. He has been located in Duluth for some time past, but much of his work has been done on the Mesaba and Marquette ranges. Mr. Fairbairn is one of the best-known mining men in the Lake Superior district. He started in the mining business under the late Captain William Oliver on the Marquette range; later he became postmaster at Ishpeming, and left that position to take the Mesaba range management of the Jones & Laughlin properties. He retired from this position less than three years ago, when he accepted the management of the Republic Iron & Steel Company's Lake Superior properties, succeeding Alexander Maitland.

C. W. Wrenshall, who has been superintendent of the Western Steel Car & Foundry Company's plant at Anniston, Ala., for four years, has been transferred to the Pittsburgh district as general superintendent of the plant of the Pressed Steel Car Company, the parent concern. In the absence of a successor to Mr. Wrenshall, A. H. Hudson, assistant treasurer of the Western Steel Car & Foundry Company, is in charge of the Southern situation.

William Hunter, chief engineer of the Reading, is on a two-weeks' tour of the principal railroad centers preliminary to the company establishing a creosoting plant for the preserving of railroad ties. The result of Mr. Hunter's trip will be embodied in a report he will submit to President George F. Baer, when Mr. Baer returns from Europe.

George H. Wadsworth, superintendent of the Falls Rivet & Machine Company, Cuyahoga Falls, Ohio, sailed August 18 on a visit to his old home, England, and also on business in England, Scotland, France and Germany in connection with the Wadsworth improved core making machines and equipment manufactured by his company.

E. S. Mills, formerly connected with the St. Paul office of the Carnegie Steel Company, has been transferred to Chicago, where he has opened an office to handle specialties manufactured by the company. George E. Slater, formerly

connected with the sales department of the Pittsburgh office has been transferred to St. Paul.

H. A. Croxton, president of the Massillon Iron & Steel Company, the Massillon Bridge & Structural Company, and the Massillon Foundry & Machine Company, has been elected president of the newly-organized Croxton-Keeton Motor Car Company, which succeeds to the business of the Jewell Motor Car Company.

F. C. Armstead, supervising engineer of the stoker department of the Westinghouse Machine Company, who, for a number of years, has been located at East Pittsburgh, Pa., has moved his headquarters to the Westinghouse works, Attica, N. Y., where the stokers are manufactured.

Reed F. Blair & Company, Frick building, Pittsburgh, have been appointed sales agents in the Pittsburgh district of Crocker Brothers, New York, manufacturers of pig iron and importers of ferroalloys. The new sales agents succeed Robert A. Bruce, formerly of Pittsburgh.

James J. Flannery, president of the American Vanadium Company, Pittsburgh, accompanied by his son, Walter Flannery, and engineers, is in Peru, looking after the company's mining operations. He will remain there until about October 1.

J. C. Maloney, superintendent of the rod, wire and nail department of the Youngstown Sheet & Tube Company, Youngstown, O., has resigned and has returned to his home, 2006 Delaware avenue, Swissvale, Pa., for a short period.

Herman B. Cox, assistant to the president of the Empire Steel & Iron Company, Catasauqua, Pa., who was seriously injured at the blowing in of the company's Oxford, N. J., furnace, July 26, is making rapid progress toward recovery.

George C. Fogwell succeeds the late F. M. Campbell as district sales agent in charge of the Philadelphia office of the Jones & Laughlin Steel Company. Mr. Fogwell has been assistant to Mr. Campbell in that office since 1903.

M. J. Maxwell, formerly superintendent of the Beaver Valley Traction Company's lines, has been transferred to Pittsburgh, and assigned to the office of superintendent of transportation for the Pittsburgh Railways Company.

Frank D. McEnteer, formerly connected with the Trussed Steel Concrete

Company, Detroit, Mich., as engineer, has become identified with Samuel E. Duff, consulting engineer, Empire building, Pittsburgh.

J. R. S. Blaine, designer for the Berlin Machine Works, Beloit, Wis., has gone abroad to investigate practice in Germany, France and England and superintend the erection of machinery sold by his company.

The Crocker-Wheeler Company, of Ampere, N. J., announce that they will open an office in the Ford building, Detroit, about September 10. Charles W. Cross will be the manager of this branch.

THE TIN PLATE CONFLICT.

Officials of the American Sheet & Tin Plate Company claimed to have made serious inroads on the striking tin workers during the week just ended. From a total of 14 hot mills working at the three plants in Sharon and New Castle, the center of the disturbance, two weeks ago, the company has increased the number to 32. So satisfactory were conditions within the mills that the local managers at New Castle and Sharon on August 16, took a part of newspaper men through the plants on a tour of inspection.

It is claimed numbers of the striking workmen have asked to be given a chance for their old positions. The sheet mill at Struthers is still picketed, though in operation. Additional deputy sheriffs were put on at Struthers to preserve order.

The American Company has filed a second petition at Ellwood, Ind., for an injunction to restrain the strikers from interfering with the operation of its plant there. The first petition was refused by Judge Baker, in Federal court.

At the plant of the Youngstown Sheet & Tube Company, Youngstown, O., where the sheet workers of the Amalgamated Association are also making a stand against the open shop, the machinists have threatened to join the striking sheet workers. The machinists demand the nine-hour day.

STEEL WORK FOR PANAMA.

The Baltimore Bridge Company, has made a number of shipments recently direct from Baltimore for the Isthmian Canal Commission, comprising steel work for buildings and collapsible steel concrete forms. The company will ship this week a 400-ton bridge by special steamer from Baltimore to Costa Rica.

Corporations to Which Charters Have Been Granted Recently

PENNSYLVANIA.

McPhetridge Oil & Gas Company, Pittsburgh; capital stock, \$25,000, at \$1 a share; treasurer, W. E. Salt, Darlington.

Mechanicsburg Foundry & Machine Company; capital, \$10,000; A. S. Jacobson, Mechanicsburg.

Long Run Fuel Company; \$10,000. Treasurer: E. C. Ployer, New Bethlehem, Pa. Directors: J. A. Beam, Chas. H. Luke, E. C. Ployer, F. H. H. Knight, all of New Bethlehem, Pa.

United States Aluminum Company, Connellsville, to acquire and develop mineral lands; \$100,000, of which \$50 has been subscribed and \$50 paid. Incorporators: H. A. Danne, J. D. Madigan, Wash Herd, D. D. Fretts and J. A. DeWitt, all of Connellsville, Pa.

Eastern Pennsylvania Power Company; \$5,000. Treasurer: George B. Cornell, Montclair, N. J. Directors: Darton L. Babcock, George C. Patton, New York, N. Y.; George B. Cornell, Montclair, N. J.; John I. Miller, Edwin C. Weller, Portland, Pa.

George S. Good Fire Brick Company; \$100,000. Treasurer: George E. Prindible, Patton, Pa. Directors: Henry F. Good, George S. Good, Lock Haven, Pa.; George E. Prindible, Ralph E. Good, George S. Good, Jr., all of Patton, Pa.

Keystone Roofing Manufacturing \$5,000. Treasurer: L. A. Meyran, Pittsburgh, Pa. Directors: F. A. McVay, Sewickley, Pa.; E. H. Jennings, L. A. Meyran, W. J. Diehl, H. E. Seibert, all of Pittsburgh, Pa.

Keystone Roofing Manufacturing Company, increased capital stock from \$40,000 to \$150,000.

Domestic Engine & Pump Company, increased capital stock from \$50,000 to \$200,000.

NEW YORK.

Hudson Yacht & Boat Company, Upper Nyack; manufacture vessels, ships, yachts, boats, etc.; capital, \$75,000. Incorporators: Frank J. V. Beck, No. 167 Gates avenue, Brooklyn; August F. Bullenbaum, Jr., No. 535 Jefferson Place, Union Hill, N. J.; George B. Seebeck, Quincy street, Brooklyn.

McKee Refrigerator Company, Brooklyn; manufacture refrigerators, stove boards, etc.; capital, \$250,000. Incorporators: John McKee, No. 119 Lorimer street; F. D. Mollenhauer, J. Henry Deck, Alexander D. Seymour, all of No. 84 Broadway, Brooklyn.

OHIO.

Youngstown Reinforced Concrete Post & Block Company, Youngstown, by Lewis Stocker, C. R. Fulkerson, Charles J. Welty, O. E. Diser and J. H. C. Lyon.

Belpre Mill Company, Belpre; W. H. Reckstiner, C. J. Reckstiner, J. S. Brown, E. Reckstiner, E. V. Brown; capital, \$10,000.

Peoples Coal Company, Ripley; Frederick Ebersbach, Ernst Dambach, A. P. Finney, G. Bambach, J. L. Wylic; capital, \$10,000.

Jewel Motor Company, Massillon; in-

crease of capital from \$250,000 to \$500,000.

People's Builders' Supply Company, Toledo; decrease of capital from \$150,000 to \$50,000.

Blue Ridge Mica Mining Company, Marion; Carl Williams, F. G. West, J. W. Thompson, M. O. Chase, Edward K. Uhler, Henry Seiter; capital, \$25,000.

Defiance Screw Machine Products Company, Defiance; William Geiger, Sidney Thompson, J. G. Schrag, A. Geiger, B. M. Schrag; capital, \$25,000.

Buckeye Concrete Company, Germantown, by A. C. Kercher, John Flinspach, Oscar Miller, John C. Banker and Poe Endress, Jr.; capital, \$10,000.

Hamden Mining Company, Cleveland, by A. D. Baldwin, G. M. Hixon, J. Foster Jr., R. J. Bulkey and J. C. Brooks.

Ajax Wheel Company, Cleveland, by J. A. Hoover, H. R. Brady, L. K. Breckle and Paul Wilkes; capital, \$10,000.

MASSACHUSETTS.

Stevens-Sowers Motor Car Company, Boston; manufacture and sale of motors of all kinds; capital, \$12,000. Incorporators: James D. Stevens, president and treasurer; Wheaton Kittredge, clerk, both of No. 18 Tremont street, Boston.

Keystone Stoker Company, of Boston; to manufacture and sell machinery; capital, \$200,000. A. B. Terry, of Brockton, is president.

Municipal Filtration Company of New England, Boston; manufacturing, sale and dealing in filters of all kinds. Incorporators: President, Allen Lowe, No. 507 Old South building; treasurer, Edgar B. Fraser, No. 43 Tremont street; clerk and attorney, William H. Dietzman, No. 18 Tremont street, all of Boston.

Davis Manufacturing Corporation, Gloucester; dealing in hardware; capital, \$50,000. Incorporators: President, John J. Davis, No. 80 Grove street; treasurer, Horace H. Choate, No. 45 Middle street; clerk, Arthur H. Brown, No. 83 Prospect street, Reading; attorney, Arthur H. Brown, Exchange building, Boston.

Campbell Electric Company, Lynn; manufacturing and sale of electric motors; capital, \$20,000. President, Charles E. Campbell, No. 74 Jefferson street, Lynn; treasurer, Frederick R. Campbell, No. 74 Jefferson street, Lynn; clerk, Addie M. Rich, No. 276 Chatham street, Lynn.

Copley Motor Company, Boston; general automobile business; capital, \$25,000. President and treasurer, J. Edward Lowell, No. 32 Cambria street, Boston; clerk, Henry B. Parmlee, No. 32 Cambria street, Boston.

Jackson Wire Manufacturing Company, Worcester; dealing in wire and wire products; capital, \$75,000. President, Chester S. Ellis, No. 48 Waldemar avenue, Winthrop, Mass.; treasurer, George W. Jackson, No. 54 Fruit street, Worcester, Mass.; clerk, J. Arnold Farrer, No. 73 Temont street, Boston, Mass.

Bay State Construction & Supply Company, Boston; dealing in machinery; capital, \$25,000. President, George R. Hughes; treasurer, Elliot B. Church; clerk, Joseph A. Stutsman, all of Boston, Mass.

MISSOURI.

Monett Canning Company, of Monett; capital, \$10,000. Incorporators: A. Bird, L. Bird, D. J. Culvey.

Henrietta Mining Company, of Joplin; capital, \$150,000. Incorporators: W. W. Armstrong, W. E. Lewis, R. A. Getz, and others.

Eastern Lead Company, of New York, with a home capital of \$600,000, was licensed to employ all of the same at Fredericktown, Mis.

Uhler Motor Company, of St. Joseph; capital, \$100,000. Incorporators: F. B. Uhler, H. R. Lewis, R. A. Graham and others.

Darber Motor Car Company. Incorporators: Clifford T. Darber, 230 shares; Allan P. Whittemore, 10; James R. Bettis, 10, of Webster Groves, Mo.; Harvey G. Dunham, 70. To manufacture and deal in motor cars. First meeting to be held July 8 at 1201 Third National Bank building. Capital stock, fully paid, \$32,000.

Little Persimmon Mining Company, Carthage; capital, \$50,000. Incorporators: H. T. Doring, J. H. Millard, C. F. Drake and others.

MAINE.

Aero Tower & Amusement Company, Augusta; manufacture and sale of machinery, theatrical and otherwise; capital, \$100,000. President and treasurer, E. M. Leavitt, Winthrop; clerk, L. A. Burleigh, Augusta.

Farmers Co-Operative Clay Works, Augusta; brick and tile; capital, \$400,000. President, R. S. Buzzell, Augusta; treasurer, S. W. Pike, Augusta; clerk, C. L. Andrews, Augusta.

Des Moines Railway & Light Company, Portland; owning and operating telegraph and telephone lines; capital, \$100,000. President, G. F. Duncan; treasurer and clerk, E. Woodman.

Victor American Fuel Company, Portland; developing coal properties; capital, \$7,500,000. President, T. L. Croteau; treasurer, A. F. Jones; clerk, J. E. Mantel.

KENTUCKY.

Madison Electric & Power Company, Richmond; capital, \$30,000. Incorporators: L. B. Herrington, S. H. Herrington and J. Hale Bean.

Sparta Hardware and Vehicle & Implement Company, Sparta; capital, \$10,000. Incorporators, Vernon Brock, H. Winn, H. W. Carver, J. W. Brock, William Lewis and J. A. Lee.

Hopkins County Coal Company, Louisville; capital, \$250,000. Incorporators, B. N. McGraw, S. T. Castleman and George C. Sandifer.

B. F. Avery & Sons Plow Company, Louisville; \$100,000 capital stock.

Tichenor-Whitaker Hardware Company, Calhoun; \$5,000 capital stock.

INDIANA.

Umbler Fence & Manufacturing Company, Alexandria; notice of increase of capital stock from \$35,000 to \$60,000; W. E. Carter, president.

Newcastle Electric Sign Company, Lafayette; notice of change of name to the Elmo Electric & Manufacturing Company; Philip W. Moore, Jr., president.

New Line of Motor Starters for Mill Work.

Recognizing that there is a demand for a motor starter of rugged construction, the Electric Controller & Manufacturing Company, of Cleveland, O., has developed and placed on the market a new line of starters which are essentially of mill type design.

In designing these mill type motor starters the Electric Controller & Man-

ufacturing Company has taken into consideration of the last named feature, this design allows more current to flow through the motor during starting than during running. If a motor be connected to a load having large inertia—such as a hot saw or a press with a heavy flywheel—the mere accelerating of the load demands a very considerable expenditure of work. Since this starting is relatively infrequent, the motor will not be injured by employing a starting current in excess of the running current. Yet the starting time will be materially reduced. There are, in fact, numerous instances where it is desirable to allow an accelerating current larger than the running current.

Experience has shown that no voltage protection which is secured by a spring return arm, is open to the following serious objections: First, the spring is likely to be either broken or weakened so that upon voltage failure the arm does not return to the off position. Second, the contacts may become so roughened that the spring is not powerful enough to move the arm. Third, an ignorant operator may block the arm in the off position, so that it is impossible for the spring to properly perform its function.

If, through any cause, the arm is not returned to the off position upon voltage failure, the motor will necessarily be subjected to a damaging overload upon the return of voltage. In the mill type motor starters, the danger of a broken or weakened arm spring is absent, because no such spring is used. The no voltage protection is secured entirely by a magnetic switch which opens upon failure of voltage. This same magnetic switch, in connection with an overload coil, is used for securing overload protection. Since the overload feature must stand the abuse and have the characteristics of a circuit breaker, the Electric Controller & Manufacturing Company believes that it should possess the advantages and arc breaking ability of a circuit breaker.

The following valuable features summarize the operation of this type of motor starter:

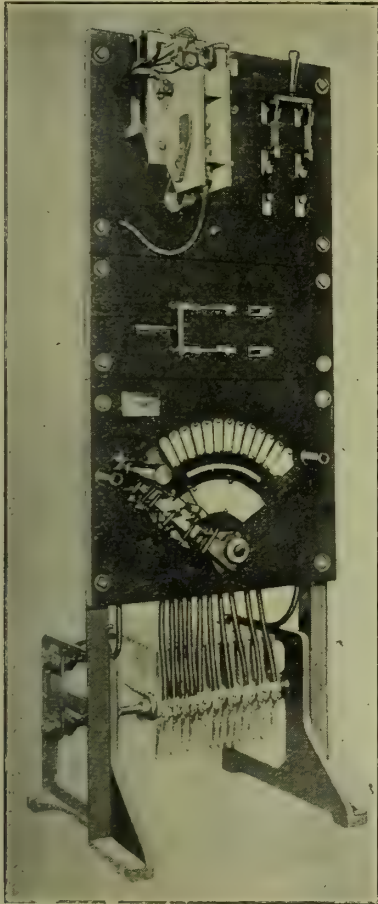
First. The magnetic switch can be closed only by bringing the arm to the off position, preventing injurious overloads to the motor upon the return of voltage after voltage failure.

Second. The magnetic switch can be held closed to the arm on any accelerating step only by holding in a push button. This prevents leaving any of the starting resistance permanently in circuit, and thereby burning out this resistance.

Third. The magnetic switch will

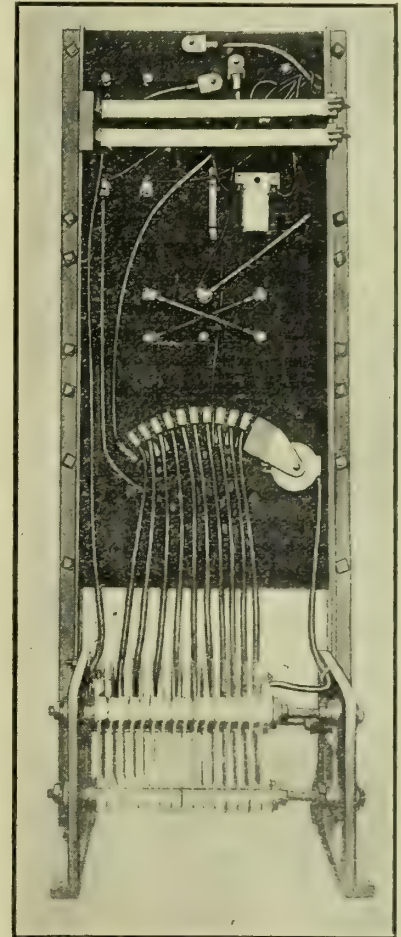
maintain itself closed only when the arm is at the full on position.

The resistance, fingers, contacts, etc., used in the mill type motor starters are of the same design and kind of material that the Electric Controller & Manufacturing Company use in controllers for heavy service. This motor starter can



Mill Type Motor Starter—Three-Quarter View.

ufacturing Company have attempted to interpret severe operating conditions, and this has necessarily led to the use of some features not found in any existing motor starter. Mill type motor starters are made in panels, have supporting feet, and are completely self-contained. The dimensions of the different forms vary only in height. In width, nothing projects beyond the slates so that adjacent starters may be placed side by side, forming a continuous control board. The starters are furnished in several forms, beginning with a very simple form and elaborated on to embrace such features as no voltage release, overload protection for running, and separate and different overload protection for accelerating. In explanation



Mill Type Motor Starter—Rear View.

therefore be rightly called of mill type design, and is well able to stand the same abuse and severe service which the most ruggedly constructed mill type motor can be expected to encounter.

CONCRETE COLLAPSES.

Press reports from Winnipeg, Manitoba, under date of August 16, say a handsome reinforced concrete apartment block, known as the Bredalbane, being erected at a cost of \$250,000, collapsed without warning. Heavy rains had moistened the concrete so that the steel girders gave way, sending down the weighty floors to the basement. Four workmen were crushed, two so badly that they may die.

Feed Water and Coal Mine Operations

By J. C. William Greth.

THE boiler feed-water problem in the coal fields is one of serious moment, especially during periods of protracted drouth. The water conditions of the summer and fall of 1908 were minimized to a considerable extent by business conditions. This year, however, with business on the increase and demand for coal becoming greater every day, the mine operator should investigate the water supplies always available for boiler feed, and consider ways to enable him to use them in the boilers during the usual dry weather of August and September, in addition to being in a position to use any available supply without scale and corrosion at all seasons of the year.

The use of water from some of the wells and creeks, with normal rainfall, usually means fighting scale only, which, as a rule from the mine operators' standpoint, is not given serious consideration, as it only means cleaning the boilers periodically or when they cease to supply sufficient steam or require repairs. The fuel wasted on account of the scaled heating surfaces of the boiler is of minor importance, as coal of inferior quality is used; and when good coal is taken off the tippie, the operator fails to realize that coal is worth to him that for which it can be sold.

While the prevention of corrosion, due to acids, etc., in the feed-water is the problem in which the coal mine operator is directly interested, a large item of expense for boiler maintenance is due to scale. For instance, to raise steam to a working pressure of 90 pounds the water must be raised to a temperature of 331 degrees, Fahrenheit. This may be done through a $\frac{3}{8}$ -inch steel shell by heating the external surface to about 335 degrees, Fahrenheit. If, however, a $\frac{1}{4}$ -inch scale of a composition which offers considerable resistance to the passage of heat intervenes, the boiler must be heated to 700 or 800 degrees, Fahrenheit, or almost a low-red heat. The higher the temperature at which iron is kept the more rapidly it oxidizes, and at any temperature above 600 degrees it soon becomes brittle and granular from carbonization, or conversion into cast-iron. This weakens the boiler and makes expensive repairs necessary.

The building of dams, reservoirs, etc., for the storage of water involves an enormous expense, and, during periods of protracted dry weather, does not always furnish sufficient water. The inevitable result is that during dry weather any kind of water is fed into the boilers to keep the mine going. This means

operating boilers on water totally unfit for boiler use, or the alternative of hauling or pumping water long distances to save the boilers from the evil effects of the always-available mine water.

Mine water, creeks, etc., fed with mine drainage, are objectionable on account of the free sulphuric-acid and corrosive sulphates, as well as the scale-forming matter, they carry. The principal corroding agent in these supplies is sulphuric-acid; but the sulphates of iron and

occurs in the boiler. Other corrosive acids and substances are also often present, but are of minor importance, as they are not nearly so destructive.

Feed-water containing scale-forming and corroding impurities causes waste and expense for the following reasons.

The overheating of plates and tubes.

Corrosion of boilers, pipe-lines, heaters, etc., making frequent repairs necessary.

Danger of rupture or explosion, due to weakening of the parts by corrosion or overheating.

Loss by waste of fuel due to scale reducing the efficiency of the boiler.

Reduced heating surfaces in water-



We-Fu-Go System—Rochester & Pittsburgh Coal & Iron Company, Punxsutawney, Pa.—Mines at Florence, Pa.

Installed by Wm. B. Scaife & Sons Company, Pittsburgh, Pa.

alumina act in the boiler exactly like sulphuric-acid, inasmuch as they are dissociated by heat, the acid being set free and the iron and alumina precipitated as sludge or scale. This sulphuric-acid, as well as that introduced with the feed-water, immediately attacks the metal, forming iron sulphate, which the heat decomposes, forming iron hydrate and free sulphuric-acid. This liberated acid repeats its action upon the metal, and through an indefinite number of destructive cycles. This acid is non-volatile; therefore the amount of the acid in the water in the boiler is constantly increased by the quantity introduced with the feed, either as free acid or combined with iron or alumina, so that the destruction of the boiler metal is in direct ratio with the concentration which

tube boilers, and decreased water-space in all types of boilers.

Necessity for cleaning and repairs.

Priming and foaming.

Loss due to cost of boiler compounds to prevent scale and corrosion.

Loss due to investment in spare boilers to put into commission when it is necessary to take boilers out of service for cleaning or repair.

Loss of fuel due to heat lost in cooling a boiler for cleaning or repair and that required to again bring it into service.

Cost of tube-cleaning machines, repairs to them, interest and depreciation on money invested and labor and power required for operating them.

Loss due to reduced output on ac-

count of boilers out of service for cleaning or repairs.

The power plant to the coal mine operator is of vital importance, for the output of the mine is absolutely dependent on its operation, and shutdowns or curtailment in necessary power affects output. The steam boiler is the power on which the mine operator is dependent, hence, feeding bad water into boilers not only causes waste and expense, but affects production.

To overcome the waste and expense due to the operation of boilers with waters containing those impurities which cause scale and corrosion, the mine operator, like nearly all steam boiler operators, has tried many make-shift methods and devices, nearly all of them depending on sound mechanical and chemical theory, but they fail to perform, in the fullest measure, what is expected of them, and at best are but partially successful, because of improper application, or due to being directed against the effect rather than the cause.

The first of these methods, whose only virtue lies in the fact that it is the oldest and the one most generally used, is the removal of scale by means of hammers, chisels, scrapers, etc. This laborious method is effective only in the older types of boiler, such as the two-flue boiler. In the return-tubular boiler the difficulties are multiplied by inability to properly clean between the tubes; in the water-tube boiler this method becomes impossible.

To replace this laborious method, the mechanical tube-cleaner was devised. With a scale of average hardness, in the water-tube boiler this device will cut the scale out of the tubes, and in the fire-tube boiler, by the rapid vibration of the hammer against the inside of the tube, the scale on the outside of the tubes is loosened and drops off. With very hard scale it is almost impossible to cut it out, especially in the water-tube boiler.

At best the removal of scale by this method is only periodic; the boiler is clean only immediately after each cleaning, and the losses due to scale increase as the new scale forms are constantly increasing until the next cleaning. Then, too, tube-cleaning is expensive, not only for the power consumed and the manual labor required for the operation of the machine, but the boiler is out of service and the investment loses its earning power.

It is also true that repeated cooling off and bringing to steam must have its influence on the life of the boiler; too often is it the case that boilers are cooled rapidly, and, as soon as cleaned or repaired, are again put into service with forced firing.

The result of this state of affairs is evidenced by the number of crystallized

tubes seen in piles near boiler houses. Repeated re-rolling of tube-ends means expense for renewing tube-ends. Mine operators who are so unfortunate as to have a boiler-feed supply which scales or corrodes usually spend a considerable amount of their earnings for repairs, new sheets, tubes, etc.

The next method in quite general use, and usually combined with the one just described, is the introduction into the boilers of the so-called compounds. Boiler compounds may be divided into two classes, those which act chemically and those which act mechanically.

The chemistry of many boiler compounds is correct, and the subject is thoroughly understood. One of those which act mechanically contains soapstone (magnesium silicate), which is supposed to give the surface of the boiler a gelatinous coating which will prevent the adherence of the scale-forming matter to the shell and tubes. Kerosene and crude oil are also used; these penetrate the scale and loosen it from the tubes, or, as it is usually put by advocates of the use of oil in boilers, "it forms an envelope around the particles of scale-forming matter, preventing their adherence to the boiler iron."

Those compounds which act chemically are generally composed of soda in partial combination with some organic acid, such as tannic, acetic, etc. Soda ash (sodium carbonate) forms the basis of nearly all such compounds; but numerous substances, such as shavings of oak-bark and tea, for the tannic acid which they contain; distillery slops and vinegar, on account of their acetic acid; potatoes and corn, for their starch; leather, slippery-elm and manure, for their gelatinous matter; molasses and sugar, for the soluble lime sucrates formed in the water, and many others have been used without judgment or reason in endeavors to prevent scale or to keep it soft.

In order to obtain results from the use of a compound, it is essential that the quality and quantity of a compound should be adapted to the water in which it is used. It is, therefore, difficult to obtain a compound that is effective with the variable quality of feed-waters and the variation in the amount of water fed into the boiler. At best, all that the most effective boiler compound can accomplish is to change the nature of the precipitate from one which adheres to the boiler iron to one which will be carried in suspension in the boiler water. This forms in the boiler water a muddy, insoluble mass, made up from the impurities in the water and the compound introduced. It is also true that the soluble impurities are increased. This must necessarily increase the density of the water and, therefore, raise the boil-

ing point. A remedy, to be of benefit, must be applied in the proper manner and at the proper place. Simply because a substance, when put into a hard water, will precipitate lime and magnesia is no reason why this substance should be put into a boiler, but quite the contrary; for heat without the introduction of chemicals causes precipitation in the boilers, and this is exactly what should be avoided. A steam boiler should not be made a catchall for the impurities in the water, or be burdened with substances introduced to prevent the deleterious action of impurities.

The cost of boiler compounds, to effect the complete prevention of scale, is prohibitive when they are used in quantities required, especially with waters available in the mining districts, and, as a rule, the quantity of compound used is only sufficient to reduce the amount of scale so that less labor is required for cleaning, or the number of cleanings by machinery diminished. The accumulation of sludge in the boilers, resulting from the use of a compound, cannot be removed by blowing off; therefore, frequent washing-out becomes a necessity.

To overcome corrosion, boiler compounds are, as a rule, quite effective; because they are usually alkaline and neutralize the acids; provided, of course, a sufficient quantity is used and that it is adapted to the particular water supply. Many compounds, however, are made up with corroding agents, and are, in themselves, the cause of corrosion.

Another method to reduce scale formation is the use of apparatus especially designed to receive the deposition of scale-forming substances, in place of letting them deposit in the boiler. These devices, known as "feed-water heaters and purifiers," are of two kinds—exhaust-steam purifiers and live-steam purifiers. The results obtained in service from these heaters as water-purifiers vary, depending, first, upon the temperature to which the water is raised; second, upon the length of time the water is kept at this temperature; and, third, upon the character and amount of the impurities in the water.

Heating water for its purification may be divided into two stages: first, to the boiling point, at atmospheric pressure, 212 degrees, Fahrenheit; second, from this boiling point to the temperature of the water in the boiler. This division is made because, in practice, exhaust-steam is generally used for temperatures to about the boiling point, and live steam for the higher temperatures.

The soluble impurities in the water, the removal of which is attempted in heaters, are usually divided into those which cause temporary hardness and those which cause permanent hardness.

The temporary hardness is due to the carbonates of lime and magnesia; the permanent hardness is due to the sulphates, chlorides and nitrates of lime and magnesia. The former is called temporary hardness, because the impurities may be removed by boiling, while the permanent hardness is not affected by boiling at atmospheric pressure. The removal of the temporary hardness of water by heat is effected by expelling the free and half-bound carbonic acid by boiling, which breaks up the bicarbonates of lime and magnesia. By continued boiling all the free and half-bound carbonic acid is driven off, thereby throwing into suspension or depositing the carbonates of lime and magnesia in excess of their solubility for a particular water. The completeness of the re-

heater manufacturers have increased the size of the heaters furnished for a certain capacity and attached thereto a chemical feeding device, on the assumption that the heating with exhaust-steam will bring about the complete precipitation of the carbonates of lime and magnesia, and that the chemicals (usually soda ash) fed in will bring about the final purification of the water by the removal of the permanent hardness, the precipitates to be removed by filters, consisting usually of crushed-quartz put up in gunny-sack bags placed on a screen with a blanket on each side of it.

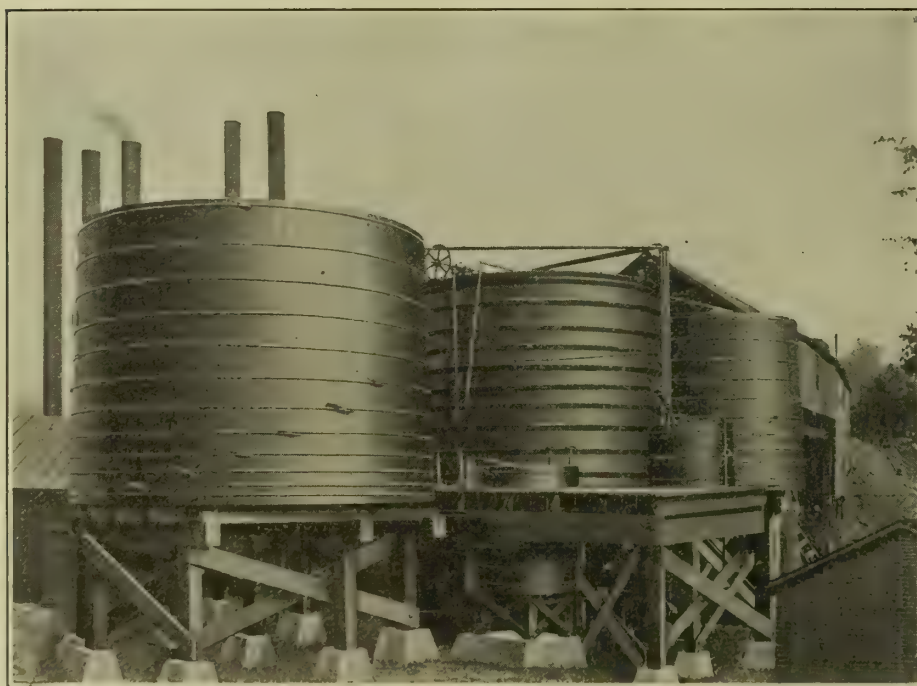
As a matter of fact, the amount of heat supplied is not enough, and its duration is too short, to remove all of the free and half-bound carbonic acid which is necessary to accomplish the precipi-

change the sodium bi-carbonate back to the normal carbonate; but, as far as the results are concerned, the soda-ash might as well have been introduced directly into the boiler. The filters used in this apparatus are not of sufficient area to keep in operation a reasonable time, and they can not be effectively washed; this being the case, they soon become so clogged that no water can be drawn through, and in many cases they are either by-passed or thrown out; then, any precipitate that may have been formed by the action of the heat or of the chemical treatment passes into the boiler.

This device has proved itself effective in some cases where the scale-forming salts in the water were so low as not to form much precipitate, but in ordinary water supplies this device has been no more effective as a purifier for the removal of the scale-forming substances than the simple feed-water heater without the extra apparatus.

The heater, as a water-purifier, is simply a make-shift in an attempt to purify the water in an apparatus the purpose of which is to heat the water. Further, in the same sense the boiler itself might be called a purifier, because scale deposits in it. We must not be led to forget that the function of the boiler is to make steam, that of the heater is to save fuel. In using heaters as purifiers, scale begins to form in the heater, and is distributed to all the auxiliaries and boiler, so that what is really accomplished is a distribution of the scale over all surfaces, with practically no real removal. The only advantage lies in the fact that the deposit in some types of heater is more easily removed than if it were deposited in the boiler. In the case of a mine-water, which usually contains free sulphuric-acid and corrosive sulphates, it is, of course, evident that the heater, instead of purifying the water, is, itself, like the boiler, corroded and finally destroyed.

There are many other mechanical and chemical make-shift devices on the market whose basic theories may be correct enough, but their application for the purification of feed-water for boilers does not bring about the desired results. One in general use and for which much may be said is the surface blow-off. Every boiler should be supplied with a surface blow-off, irrespective of the character of the feed-water. It is absolutely impossible to obtain a water from natural sources which does not contain some impurity. In a study of the circulation of the water in the boiler, numerous analyses have shown that there is a tendency for the impurities to collect at the water line. A surface blow-off is, therefore, ideally adapted to reduce concentration at that point, and it is ef-



We-Fu-Go System—United Coal Company, Pittsburgh, Pa.—Mines at Meadowlands, P.

Installed by Wm. B. Scaife & Sons Company, Pittsburgh, Pa.

moval of the carbonates by boiling depends on the length of time the water is boiled.

At temperatures below the boiling point there is a diminution of the precipitation of the carbonates of lime and magnesia, for less carbonic acid is removed than at boiling temperature; it is, therefore, impossible to reduce the carbonates of lime and magnesia to the limit of solubility for a particular water in the time allowed and at the temperature obtained in practice in any of the exhaust-steam feed water heaters of either the open or the closed type; but, for the prevention of scale formation, this maximum reduction is essential.

Admitting the inefficiency of feed-water heaters as purifiers, some of the

tation of the carbonates of lime and magnesia; consequently, there is left in the water some carbonic acid. This carbonic acid will combine with the sodium carbonates (soda-ash) added, and form sodium bi-carbonate. This sodium bi-carbonate will not react with the substances which make up the permanent hardness, so it becomes necessary to add sufficient soda-ash to take up all the free and half-bound carbonic acid which the water still contains, in addition to that required to react with the permanent hardness. This means an excessive and expensive treatment.

It is true that sodium bi-carbonate thus formed will react with the salts of the permanent hardness in the boiler; because the heat there is sufficient to

fective in increasing the dryness of the steam; and, further, by the removal of the impurities collecting on the surface of the water, it aids in the separation of the steam from the water. The office of the surface blow-off, however, is simply that of a blow-off, not that of a scale preventative; and it will not prevent corrosion.

There is, however, a perfectly rational and successful method, by means of which a water-supply can be so purified that it will neither scale nor corrode the boilers, no matter how long they may be in service. This process is known as the softening and purifying of the water, and is accomplished by removing from the water, by chemical treatment, sedimentation and filtration, the scale-forming and corroding substances it contains before it is fed into heaters and boilers. This method has been in use for years, and has been thoroughly tried out, softening and purifying any available water supply, including a large number of mine waters. The re-agents used in this process are the cheapest known to chemists, and are bought in the open market at prices varying from $\frac{1}{4}$ to $1\frac{1}{4}$ cents per pound.

The apparatus, to give the desired results, must be designed to meet the requirements for bringing about complete chemical re-action in every possible way, in order to secure the maximum practical purification with a minimum amount of re-agents and attention. These requirements may be summed up as follows.

1—Accurate chemical treatment: the introduction of the proper re-agents in exact quantities required to re-act with the impurities in the water.

2—Thorough mixture of re-agents with the water, in order to insure the necessary chemical reactions.

3—Accelerated chemical re-action: this is brought about by thorough mixture and mixing the sludge of previous softening with the new finely-divided precipitate, and by heating the water, if the nature of the water is such that heat is required, to complete the chemical reaction.

4—Complete chemical reaction: which is brought about by perfect mixture of the re-agents with the water by having the apparatus large enough to allow sufficient time for all the reactions to take place, and the apparatus so designed that every part of it is effective.

5—Rapid sedimentation: this takes place when the new finely-divided precipitate is weighted by the sludge of previous precipitation, causing it to settle more rapidly and perfectly.

6—Perfect clarification: this is accomplished by allowing time for sedimentation and final clarification by perfect filtration.

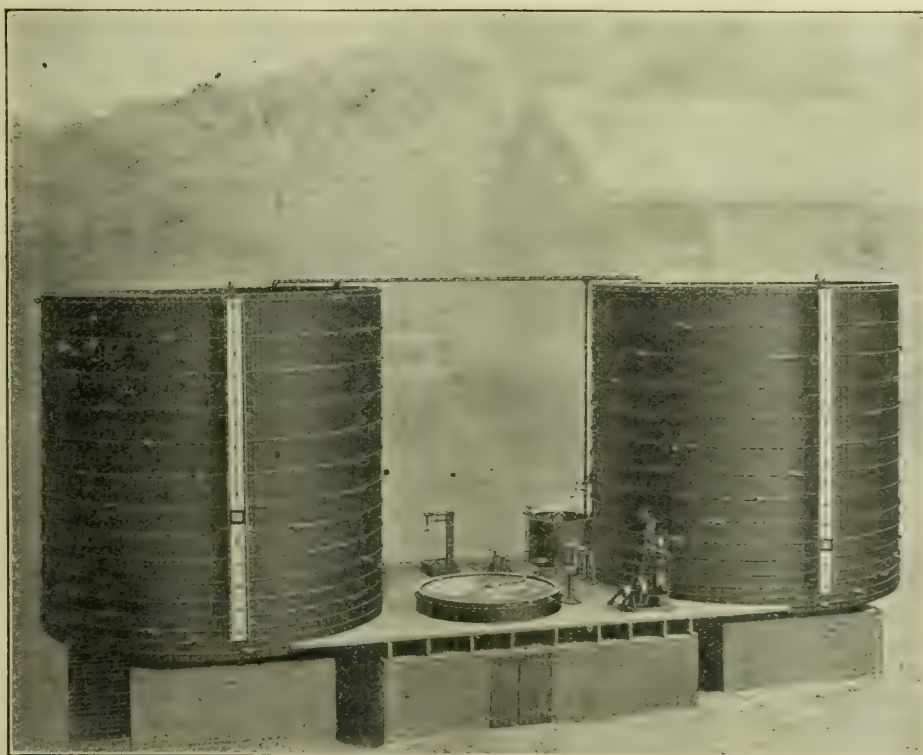
A water-softening and purifying system which meets all the above requirements is described and operated as follows

The system consists essentially of two treating and settling tanks, equipped with mechanical-stirring devices operated by power, a re-agent or chemical mixing-tank, with mechanical stirring device and steam-jet pump for introducing re-agents into treating tanks, and a mechanical gravity-filter.

The treating tanks are filled alternately with water. While a tank is filling, the re-agents are introduced and thoroughly mixed with the water by means of the mechanical-stirring devices, consisting of a specially designed paddle

to the bottom of the tank. The softened water is taken out of the tank by means of a hinged floating outlet-pipe, arranged to rise and fall with the level of the water, so that the water is always drawn from the top. The water at the top, being the clearest, carries the least amount of floating sludge through the floating outlet-pipe to the filter beds; therefore, the filters can be run the longest possible time without being cleaned. The rate of flow to the filters is automatically controlled, so that they are supplied with water as fast as it is drawn from them.

While one tank is being filled, treated and settled, the other is supplying treated water, and by the time it is empty the



We-Fu-Go System—Verner Coal & Coke Company, Bulger, Pa.

Installed by Wm. B. Scaife & Sons Company, Pittsburgh, Pa.

revolved by power from an available line-shaft, an engine or a motor. The paddle not only mixes the re-agents with the water, but, at the same time, stirs up from the bottom the sludge of preceding purification. This sludge floats in the water, hastens the chemical reaction, and causes the new finely-divided precipitate to form large woolly flakes heavy enough to settle quickly as soon as the water stops moving. This paddle-stirring device is the simplest and most efficient that can be devised. With reasonable care, it will not get out of order, does not have to be cleaned to keep it in working condition, and it requires very little power.

After a tank is filled, the stirring device is stopped and the water permitted to stand to allow the precipitate to set-

tle to the bottom of the tank. In this way a constant supply of accurately treated soft, clear water is always on hand.

Pipe connections, through which to fill the tanks and to wash the sludge from the tanks, are placed in the bottom. The washing of the settling-tanks needs to be done only about once a week, or when the sludge becomes deep enough to interfere with the stirring. To do this, it is necessary only to open the valves to the sewer and start the stirring device to mix up the sludge, which is soft enough to flow through the pipe into any sewer.

From the above description, it will be apparent to anyone that this type of apparatus is one which will give the most

(Continued on Page v.)

INDUSTRIAL WORLD

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SIX MONTHS OF OPEN MARKET.

SIX months have elapsed since the somewhat startling announcement was made that the famous "price maintenance policy" in the finished steel trade had been suddenly abandoned, and the market thrown open to competition. The defunct policy had some friends left, and early in the open market period they insisted that the results achieved through the open market were not good, that there was just a little spasm of buying and that it would not be long before all would have to admit that the second stage of the market was worse than the first.

At the end of six months no such statement can be made. The steel trade has been put upon a really solid foundation. The situation is not perfectly satisfactory from every viewpoint, but it is better than would have been expected and whatever is unsatisfactory could not possibly be held to be directly due to the break in prices. Production has not mounted up to the full measure of capacity, but surely no one will venture to assert that if the old prices had been held until now the demand would be better. Prices, too, are not up to the old level, but they have been recovering steadily, and all the recovery that could be expected in the time afforded has occurred. Probably the only way to have higher prices at present would have been to start looking for the bottom sooner. If the break had come a couple of months before the November election, for instance, the "election boom" would

have had a more substantial foundation and would probably have constituted the beginning of a steady improvement, instead of playing out in a couple of months as it did.

While the great price maintenance campaign cannot as yet be seen in a very long retrospect, enough time has been afforded to obtain a little better view of it than the view obtainable at the time. Possibly the most striking feature of the movement, from the present viewpoint, is that there was really so little novelty in it after all. One easily recalls the frequent references to the movement as a new discovery, the product of an enlightenment to which in its savage state the steel trade has been a stranger. Looking back on the movement the most striking difference from previous movements appears to be in the accompanying frills. Whenever the market has gotten weaker the tendency of manufacturers had been to uphold prices. Reductions have always been made grudgingly. This last movement lasted a little longer, and was accompanied with considerable more ceremony, than has normally been the case.

The recovery from the low point in prices has been steady and healthy. From utterances during the 15 months in which the price maintenance policy was followed, one could not avoid the conclusion that steel manufacturers felt that there was no hope for the industry, once the price structure was broken; that a break would be followed by an indefinitely long period of indiscriminate and suicidal competition. The apotheosis of old prices made heretical any belief that steel prices could advance of their own accord, yet they have advanced freely. They have regained more than half the ground lost in the break, and it is a rapid movement to find a bottom and recover more than half way, all in six months.

The price maintenance policy was criticized as a movement based on pessimism and not on optimism as its votaries claimed, and in the retrospect much can be seen to justify that criticism. Fairly full activity has been restored to the trade, and if it had been anticipated that this could be done, it is extremely improbable that the recovery would have been postponed so long when the remedy was so simply. Evidently there was not enough optimism to produce the belief that such recovery was possible. Again, the Steel Corporation's showing of earnings is to the effect that it passed through the period of low prices very comfortably, while as to future earnings the promise is obviously excellent, since there has been such an improvement in prices. A reasonable amount of optimism, last year, would have produced the belief that if

prices were reduced they would recover rapidly enough. It seems fair therefore to dub the price maintenance policy the result of a doctrine of pessimism and not of optimism, as its votaries claimed.

The future is necessarily in doubt, but it is in vastly less doubt than had the blind adherence to old prices been maintained. Tonnage has been steadily increasing and the promise is for several years, say three, or possibly four, of a good measure of activity. Necessarily the movements will be quieter. The trade is satisfied with excitement. There will, however, be movements. Demand will have its ups and downs, and a natural adaptation of prices to demand will lessen the amplitude of the swings. Really the best guarantee the trade has of steadiness in the future is the fact that prices are not to be held steady, but are to move according to conditions. For its greatest prosperity the trade needs steadiness in demand more than it needs steadiness in prices. The more steadiness in demand the more steadiness there will be in prices, while the experience of the past two years has furnished conclusive evidence that the converse is not true, that steadiness in prices does not contribute to steadiness in demand. Of course it was intimated that the steadiness in demand in 1905-6-7 was due to steadiness in prices, but that was mere talk. Any analysis of quotations would show that prices were really not steady at all in that period. There were few declines, but there were many advances. There was more or less irregularity, from any viewpoint. While finished steel products did not recede to any extent at any time in the period it may be remarked, merely for a little illustration of the lack of harmony, that the highest price for structural shapes in the movement was attained August 31, 1905, 1.70c, while the highest price in wire products, \$2.05 for nails, was not reached until September 3, 1907, two years later, and less than two months before the panic. So altogether, the striking features which the price maintenance movement will carry down into history will relate to the frills with which it was accompanied rather than the substance of which it was composed.

SCRAP AND PIG IRON.

SCRAP requirements for the basic open-hearth steel furnace continue to increase. The open-hearth steel plants felt the revival in demand before the Bessemer steel plants, while open-hearth capacity is constantly increasing. The latest prospective addition to the list of buyers of melting scrap in the Pittsburgh district is the Standard Steel Car Company, which is building a plant to contain six 60-ton basic open-hearth

furnaces. This plant should be good for 5,000 to 10,000 tons of scrap consumption per month, and this is only one of many, since one new plant after another has been built. The Page Woven Wire Fence Company is increasing its open-hearth capacity, and will soon be a larger buyer. The open-hearth capacity of the Steel Corporation has been increasing rapidly, and as to the Pittsburgh district, the Carnegie Steel Company's scrap production, relative to open-hearth capacity, has been decreasing. Thus the company abandoned its two Bessemer converters at Duquesne some time ago, and has added 18 open-hearth furnaces, thus making a double change, as a Bessemer department is a scrap producer while an open-hearth department is a scrap consumer. In addition to this change in the alignment in Carnegie plants, it may be noted that the Bessemer converters at Homestead have not been operated for a long time, so that while they have not been abandoned the Homestead plant may be considered as on a par with Duquesne, a producer of open-hearth steel only. The supply of steel at Homestead is kept up by shipments of ingots from Edgar Thomson, where the converters are kept in full operation, while the two largest rail mills are running only day turn. Then the Steel Corporation has the Gary plant, solely an open-hearth proposition, and if the corporation used the same proportions of scrap and pig as do some of the independents in open-hearth work it would be an enormously large buyer of scrap, so large that its requirements could not possibly be met.

There have been some scares in the past as to a possible shortage in the supply of scrap for open-hearth use, but enough material has hitherto been found to enable the mills to make out fairly well. The present is more than a scare, as the actual shortage is apparent, and prices of material have advanced correspondingly. While basic pig iron is \$15.25, valley, or \$16.15, delivered Pittsburgh, heavy melting steel has been sold delivered at one Ohio River plant at \$17, and has been available only in limited quantities even at that price. Scrap dealers are very bullish as to prices. Some are holding material for \$18, but against this it may be noted that some blast furnaces are holding basic pig for \$17, so that the scrap trade has not so much on the pig iron trade in that respect.

The supply of open-hearth material has been largely augmented in the past few years by the diversion of material from the iron mill, some grades of scrap which at one time normally went to the iron mill now going regularly to the steel works. This has pushed the iron mills, and the tendency is to get away

from that business. The leader in this line, the Republic Iron & Steel Company, is constantly trending away from wrought iron and becoming more interested in steel. While it has not definitely decided upon the final abandonment of all wrought iron manufacture, it is steadily trending away from it, and having brought its Bessemer department up to the full capacity of any two 10-ton vessel plant in the country it is considering open-hearth steel manufacture and will probably lay definite plans for an open-hearth plant within a short time.

OUR RETROSPECT.

"NOTHING new under the sun," is an aphorism true, according to the measure of intelligence with which it is regarded. In anything that is popularly regarded as new we find parts which are old. One does not use parts, however. Twenty years ago Langley proved that with a reasonable amount of power aerial flight could be accomplished, and Lilienthal actually flew by soaring without the use of power, but regular flight awaited further perfection in the gas engine and even now the chief of the difficulties encountered is in the engine. Actual flight is new, but some of the parts are relatively old. In our issue of August 23, 1889, an even 20 years ago, we find a little item which illustrates the aphorism in its true bearing. The item is as follows:

"Rolled Steel Car Wheels.—The Continental Rolled Steel Car Wheel Company, of Norristown, Pa., has, after considerable experiment, developed a machine for rolling wheels from steel blanks. The company proposes now to establish a plant with a capacity of 100 wheels a day. The wheels will be made from either Bessemer or open-hearth steel, manufactured at Norristown. There are six rolls, two above, two below and two working against the rim of the wheel. It is thought that a pressure of 200 tons to the square inch will produce the best results, and it is said that the company proposes to furnish a wheel cheap enough to compete with the cast iron wheel."

Whether that process produced, or would have produced, a wheel of satisfactory quality we do not know, but we do know that it could not have produced a steel wheel "cheap enough to compete with the cast iron wheel." Accordingly, the steel wheel was not a commercial success at that time, while 20 years later it is being adopted. If the present demand had existed at that time a process would have been found for making the product, and if the demand had been sufficient the necessary

price would have been paid. The idea of making a steel wheel by rolling is old, so that in that respect there may be nothing new under the sun, but the complete combination of process, cheapness and demand, was lacking. The chief change in the conditions in 20 years has been the change which has brought about demand for a steel wheel, even though at much greater first cost than that of the cast iron wheel.

Our market report in this issue shows that the main change in prices in 20 years has been one of alignment, as the general level is not so different from that prevailing to-day. Pig iron at Pittsburgh is quoted as follows:

Neutral mill	\$15.00—15.55
All-ore mill	15.50—16.00
No. 1 foundry, native ore	16.50—17.00
No. 1 foundry, lake ore..	16.75—17.25
Bessemer	17.75—18.00

The average of the above prices is not far from the present level, delivered Pittsburgh. We do not know just what "No. 1 foundry" meant in those days, but if the nomenclature was the same as at present, there was a spread of \$1.50 or \$1.75 between foundry and Bessemer, while the spread at present is only .75 cents. We find muck bar was quoted at \$28, which is about to-day's market. Rails we find at \$29, \$1 above to-day's market, and Bessemer billets at \$28, \$4 above today's market. Finished material was generally higher, the nearest approach to present prices being in cut nails, which are given at \$1.90, against \$1.75 to-day. The chief change in 20 years has been a lessening in the spread between crude material and finished product. In the metals we find aluminum quoted at \$4 per pound. There has been quite a drop in 20 years, the present market being 24 cents.

RESUME IN FULL AT STEELTON.

Within the past week the Steelton plant of the Pennsylvania Steel Company has resumed in full. The July payroll showed the total number of men employed to be 6,771, which was increased by over 1,000 on August 9, when the Bessemer department started, after being shut down since November, 1907. This practically doubles the number of men employed at Steelton over that in July of last year.

The Bessemer department is to produce steel by the duplex method, experiments having been in progress for some time with that end in view. The last of the open-hearth departments also was started within the past week. The rail mill, which has been on full turn for a fortnight, is operating on light rails. July, with one exception, was the heaviest month in open-hearth output in the history of the plant.

Market Conditions, Prices in Producing and Buying Centers

Trend of Prices Continues Upward.

PITTSBURGH.—With an advance by the Steel Corporation of \$1 a ton in steel bars, effective during the week just ended, Pittsburgh looks for increased prices on plates and structural shapes within the coming fortnight. The week has seen a stiffening in all lines, the independent interests even making an effort to advance quotations in sheets and tin plate. And with it all, came a much firmer market in all grades of iron, though actual transactions were not heavy, the larger buyers evidently hesitating to pay the advances asked.

Independent interests have been asking 1.35c for steel bars for some weeks, but the Carnegie Steel Company only withdrew its minimum of 1.30c, and established the 1.35c rate during the week just ended. Simultaneously, several of the independents advanced their quotations to 1.40c, Pittsburgh. The last of the iron bar producers also advanced prices to 1.50c, the price at which the Republic Iron & Steel Company has held its product for some weeks.

The production on billets and bars during August probably will exceed the largest previous record. Mills are behind an average of two months in deliveries. Quotations remain at \$24 for Bessemer, \$25 for open hearth and \$28 for forging billets, but liberal premiums are being paid for prompt deliveries, an Ohio interest having been reported as closing for a small lot of axle billets at \$30, within the week. Bessemer billets are still \$1 below the price quoted a year ago, while plates and shapes a year ago brought 1.60c, as against the present prices of 1.40c and 1.45c.

The independents in sheet and tin plate lines are in many instances asking above the established prices, particularly in specialties. The demand for sheets, especially, has increased until deliveries are delayed, and all producers are refusing to contract for future deliveries at present figures. It is intimated that the American Sheet & Tin Plate Company has practically decided to sell no tin plate for 1910 delivery at less than \$3.55 per box, an advance of 15 cents over present prices. There will be no advance, however, by the leading interest for this year's delivery.

The rush to place new structural contracts before the fabricating concerns and the rolling mills are filled up for the fall season, has resulted in the placing of much new work that it had not been intended to let until September.

Railroads have had much to do with the present situation in the structural market. While the American Bridge Company is said to have reserve capacity even yet that will enable it to considerably increase its contracts, several of the independent concerns in Pittsburgh district have taken on contracts that promise to test their capacity for months. One concern is said to have filled up to January 1. The uncertainty in this situation is increased by the fact that there are serious delays even now, in deliveries of the plain steel, so that the halt in getting fabricated shapes on the ground has in some cases extended the time of fulfillment of contracts for three months and more.

The prospect of a car shortage is beginning to be feared, with the coming of heavy crop shipments in the fall. Already suitable equipment is not so free to shippers as it was in the spring months, and Pittsburgh district railroad officials freely admit that rolling stock now on hand will not be equal to such a demand as that which taxed the railroads during the rush months of 1907—while the prospects are that that rush will be even exceeded the coming fall.

The iron market in Pittsburgh presented an interesting study during the week just ended. While furnaces were steadily holding their stocks at the highest quoted figures, buyers, who failed to get in the market before the recent advances, were slow to close contracts at the new prices. Thus, while the tonnage involved in the actual transactions was not large, the prices were held even more firmly than during the week preceding. The stiffening of prices in Bessemer and some foundry grades, though viewed by some buyers as not justified by present conditions, seems likely to be fully vindicated before the close of the month. For instance, the sale of a small lot of 200 tons of Bessemer to an Eastern Ohio concern, through a local broker, at \$16.50 Valley, for fourth-quarter delivery, marked an advance of 50 cents over all previous sales—though it is maintained that Bessemer will still sell at \$16 for several weeks. However, an ultimate increase of Bessemer to a mark of \$16.50 or even \$17, is plainly forecasted, unless there is a complete change in conditions within the next 60 days. No. 2 foundry, though still given a minimum quotation of \$15.25 Valley, has sold at \$15.50 and even \$16, the latter for delivery during the last quarter. A small lot No. 3 foundry brought \$15.25, Valley, during the week, indicating the generally rising trend, despite the argument of buyers that prices have reached a

point where they should be regarded as stationary.

Contracts for the first quarter of next year in basic and foundry irons are still impossible to secure at present prices. One large local interest, which has been in the market for several weeks with an inquiry for basic, took 2,500 tons for last quarter delivery at \$15.25, Valley, and the same price ruled in another contract, closed by an Allegheny county concern that found it had underestimated its needs for the present year. This interest bought 1,500 tons, for delivery during September and October.

These were the only two large sales reported, though there was a good volume of scattering business, at a somewhat wide range of prices, particularly on foundry grades. Small lots of high grade malleable brought as high as \$16, Valley, though the minimum remained at \$15.50. A large tonnage of both Bessemer and foundry irons, some of it made during the depression, still is being held for higher prices, and there is little or no indication of any shading in getting rid of these stocks.

Furnace capacity in Pittsburgh district and in the Valleys is to be considerably increased before the close of August. Steam is up at the Neville Island furnace of the Carnegie Steel Company, and the first cast will be made early in the present week. The isolated situation of this stack has left it to be among the last to be blown in by the Steel Corporation. This is the first time it has been active since the Carnegie Steel Company took it from its prior owner, the American Steel & Wire Company. The Edith furnace, in Woods Run, will be blown in by September 1. The new Duquesne furnace No. 5 already has been blown in, and the last of the new Duquesne group, No. 6, will be ready for operation within a fortnight. The Carnegie Company is operating practically all its open hearth capacity at Duquesne.

In the Valleys, the Ella furnace of M. A. Hanna & Company was blown in two weeks ago, while the Hanna Company also will start the Fannie within a week. This is the last idle stack in the Shenango Valley. The McKeefrey furnace, at Leetonia, is getting ready to go in blast. This will leave three stacks in the Mahoning Valley out, both for repairs, with another to go out at an early day for re-lining.

It was reported that the Clinton furnace, Pittsburgh, the only stack in Allegheny county making foundry iron, will go in blast by September 1, most of its large stock, piled up during the depression, having been exhausted.

Further increases came in the capacity at the Bessemer rail mills at the Edgar Thompson plant of the Carnegie Steel Company during the week, as a result of large orders for standard rails during the past fortnight, some of which call for early delivery. The only idle Bessemer steel plant of the Carnegie Company is the Columbus, O., works, which will resume within the next two weeks. Its main output is sheet bars, and the labor troubles in the sheet mills of the leading interests have somewhat curtailed the demand for sheet bars.

Ferromanganese and ferrosilicon stiffened in price during the week. Manganese appears to have absorbed most of the \$1.50 tariff reduction, and is quoted at \$41 to \$42, Baltimore, while 50 per cent ferrosilicon ranges from \$64 to \$66, Pittsburgh.

The tin plate trade has been surprised by the sustained demand through August. Bookings of late orders show that an increase in capacity by both the leading interest and the independents has been fully justified. The American Sheet & Tin Plate Company, reports a gain in output at the plants where the labor troubles are on, 137 mills being in operation, or 62 per cent of its 221 serviceable mills. At the three plants at New Castle and Sharon, where the striking workers made their hardest stand, the company claims a total of 32 mills working out of 70. This is a distinct gain over the previous week. Numbers of the striking employes have returned to work, and others have applied for their old places as soon as the company is ready to start additional capacity. About 80 per cent of the company's sheet plants are in operation—a total of 142 mills as against 104 mills during the corresponding week of 1908.

Some independent sheet interests are refusing to book orders at present prices after October 31, in anticipation of a general advance. In the tinplate trade, there are numerous individual price advances. Both the combine and the independents are behind in deliveries of tin plate, the canning trade having been caught short on the season's demands. Advances on bright and roofing plates of 15 to 25 cents a box on transient business are noted by a number of independent concerns. All the independent mills are running full.

As anticipated last week, practically all the large bookings for steel cars by the trunk line railroads have been placed. Car makers, however, are filled up to their capacity until the first of the year, without taking the continued labor troubles of the Pressed Steel Car Company at its McKees Rocks plant into consideration. As yet the McKees Rocks plant is unable to make any actual showing, despite the importation of men at

intervals. The Carnegie Steel Company is said to be nearly 10 weeks behind on some deliveries of plates, notwithstanding this interruption. A further plate advance following that on bars made during the week just ended would not be surprising. The order placed 10 days ago by the Baltimore & Ohio with the car companies will in itself require nearly 50,000 tons of plates from the Carnegie Company.

Structural orders were further augmented during the week by the railroads. The American Bridge Company will furnish 4,000 tons of fabricated material for the by-products gas building, the skull-cracker building and the stripper building in connection with the new plant at Gary. The Carnegie Steel Company will furnish 1,500 tons of plates and shapes for the new blast furnaces of the Youngstown Sheet & Tube Company, at Youngstown, the contract for which has been awarded to the William B. Pollock Company. The McClintic-Marshall Construction Company is to build the new mill buildings for the Southern Iron & Steel Company, at Gadsden, Ala., and also has the contract for the Ashworth building, Duluth, 1,000 tons. A 1,000-ton contract for the building of the new Burlington shops at Havelock, Neb., was taken by the Riter-Conley Company. Several large railroad contracts are yet to close, though it is said local fabricators outside the leading interests are filled to about their capacity for several months to come.

Prices on scrap iron and steel have stiffened materially during the week and dealers predict an advance of \$1 to \$1.50 per ton on all grades during the next two weeks when it is expected larger orders will be placed. Transactions are not heavy, but this is because material is being held back for still better prices. A very large tonnage is held by producers and dealers, but on all hands a high scrap market is expected henceforth. The Baltimore & Ohio and Pennsylvania have closed for considerable quantities, and the fact that the Republic Iron & Steel Company and the Pullman Company have bought large tonages and are in the market for more has had its effect. Sales of heavy melting steel have been made at \$16.50 and at \$17, for delivery at different points. Some dealers are holding for \$18, or even higher. Cast borings are higher, \$10 to \$10.50.

Railroads Furnish Keynote For Eastern Market.

NEW YORK—The railroads still furnish the keynote for the Eastern market for the third week of August, when the Steel Corporation, on opening its books for 1910 rail orders, found 200,000 tons of stand-

ard rails taken up immediately for delivery early in the coming year, 75,000 tons being from Western railroads. The opening of bids for some 20,000 tons of steel for New York, Westchester & Boston improvements also came during the week, but no decision has been announced.

Rail orders of the week, for this year's delivery, include 1,200 tons from the Central Railway of Haiti to the Carnegie Steel Company, and 5,000 tons from the Burlington to the Lackawanna. The Baltimore & Ohio's rail order aggregated 27,200 tons, including, besides the 12,000 tons to the Carnegie Steel and 3,000 tons to the Illinois Steel, which were mentioned last week, 2,000 tons to the Bethlehem Steel and 10,200 tons to the Maryland Steel.

The Winston-Salem line which the Norfolk & Western and the Atlantic Coast Railway are building will require 4,000 tons of additional bridge work, which is to be furnished by the Pennsylvania Steel Company, and the Virginia Bridge Company. The Lehigh Valley is in the market for 1,200 tons of structural shapes, which will probably be rolled for the most part at Bethlehem.

Aside from a genuine scarcity of basic pig iron for delivery during the balance of the third quarter, the iron market failed to show any pronounced new features during the present week. There is an absence of large inquiries for foundry irons, but small lots are taken up at prices ranging around the new level of \$17.50 for No. 2 Eastern furnace.

The Virginia furnaces, which have been out of the market for some time, are more active, disposing of a large tonnage on a basis of \$14.50 furnace. Some Virginia iron also has been taken for first quarter of next year at \$1.50 premium. In basic, one lot of 25,000 tons is reported to have been sold to an Eastern interest at \$17.30, delivered. There is a good inquiry in the market, which leads to the belief that there will be higher prices later. A feature of the inquiry is the query for 8,500 tons for this year's delivery, which has been put out by leading electrical companies. There has been a sudden increase in the demand for iron from the agricultural implement makers.

The letting of the contracts for two new battleships during the week means a demand for about 26,000 tons of steel for the hulls, exclusive of the armor plate. The bookings for the week promise to exceed 20,000 tons of structural work, by the American Bridge Company, alone, while it is expected that the leading interest's total structural contracts for the month will be close to 100,000 tons, which is much above its maximum capacity.

Go to Virginia Furnaces for Iron.

PHILADELPHIA—A sale of 25,000 tons of basic iron, for shipment over five months, extending from September, at \$17.30, delivered, and another sale of 5,000 tons for first quarter of 1910 at \$17.50, delivered, set the pace in the iron market this week. Furnaces are behind on contracts now running, particularly in basic, and hence there is an active demand by melters for immediate deliveries. There is little prompt 2X foundry to be had at \$17, delivered, and contracts for immediate shipments have been made at \$17.25 and \$17.50, delivered, for fourth quarter delivery.

Virginia furnaces have sold considerable quantities of foundry iron at \$14.50 to \$15, furnace. Pennsylvania furnaces are so behind at present that they are willing to let the immediate business go elsewhere.

The combination of the large mills in the scrap market claims to be getting all the old materials it needs. Transactions, however, are carefully covered, and dealers who are negotiating with the new agents of the steel makers are kept in the dark as to what prices are given others. The joint arrangement, the mills declare, has been operating successfully. Heavy melting scrap is nominally quoted at the mills at \$17, delivered, and the market has undoubtedly loosened up during the week just ended. Efforts at the importation of English and European scrap are meeting with slight success. Quotations on ferro-manganese varied greatly, ranging all the way from \$41 to \$43, Baltimore, for the balance of this year.

Halt in Orders Till Mills Catch Up.

CHICAGO — Heavy miscellaneous buying by railroads, of rail tonnage aggregating 16,000 tons from the Illinois Steel Company, coupled with the evident inability of the rolling mills to keep up with the requirements of the car and structural industries has resulted in the crowding of the western mills beyond what was thought possible a few months ago. It seems likely that the mills will be unable to supply the car makers with their steel fast enough to avoid delay in the getting out of the 25,000 cars contracted for within the past two months. These will require, it is estimated, nearly 500,000 tons of steel.

The contracts for the new Pullman shops, as awarded to the Kenwood Bridge Company, call for about 7,000 tons of steel, and this is to be supplemented by an additional order within a few weeks. Meantime the specifications on all this work are to be rushed

to the mills, in order to avoid delays in deliveries. The Chicago & Northwest-ern also has placed a 4,000-ton order for materials for further track elevation work.

The Inland Steel Company placed in operation the fourth galvanizing pot in its sheet mill at Indiana Harbor, which gives it a daily capacity of 125 tons of galvanized sheets. Four more pots are under construction. It is said another important independent interest in the Chicago district will be ready for an announcement of extensions within a few days.

Practically all the melters of steel-making irons have covered their requirements for the present year, and there is still a reluctance on the part of northern furnaces to quote prices for 1910 deliveries. Sales of malleable Bessemer during the week amounted to over 10,000 tons. Sales of No. 2 foundry were made at \$17.50, Chicago, for delivery during the remainder of 1909, and the first quarter of 1910. One lot of Northern No. 2 was made at \$17.75, Chicago, on a basis equivalent to \$13.40, Birmingham. The Oliver Plow works, of Indiana, took 5,000 tons of charcoal iron, but the price was not made public.

Quotations on billets continue merely nominal, mills being sold for months ahead, and premiums being necessary for prompt deliveries.

Ohio Furnaces in Market for 1910 Deliveries.

CINCINNATI—Southern iron this week became definitely fixed at the new price, \$13.50, Birmingham, for August and September delivery. Advances to \$13.50 have been announced by nearly all the Alabama furnaces; while Northern furnaces are still quoting \$15 for delivery any time this year, and quotations on northern foundry iron for next year's delivery range from \$15.25 to \$15.75, with no tonnage of any considerable size closed. A Michigan radiator manufacturer is inquiring for 8,000 tons of analysis foundry iron, for delivery through 1909-10, about 500 tons to be delivered this year. A Michigan furnace seems likely to take this order. A large tonnage of Northern basic has been contracted for by an Ohio manufacturer, the price of which is said to have been \$15.50, Iron-ton, for delivery next year. The scrap market is stiffer in tone, with no large transactions.

Rogers, Brown & Company, in their special Cincinnati report for the Industrial World, say:

Stronger feeling daily, growing interest in next year, and advanced prices are signs of the week in the pig iron trade. Good sales and earnest inquiry for next year have been more prominent than at any time heretofore. Many furnaces are either refusing to quote for next

year or naming prices materially in advance of this for 1909, but so far have seen no retarding in the interest shown for 1910 delivery.

Movement of all material is brisk and demands for shipments on existing orders are in the main good, buyers apparently realizing that it will take but a very short time for things to continue as they are now to afflict us with the same transportation troubles we have experienced in the past. In spite of all the new equipment recently bought, there will probably be a serious car shortage later on. There has been a sharp decrease in the idle cars during the last two weeks, amounting in all to some 37,000 cars. The idle cars on all railroads now number only 207,173. Of the 37,000 decrease, 12,575 were box and 17,189 coal and gondola cars. The report shows the reduction is general throughout the country. It is said that if such reductions continue there will be a severe shortage before October.

The week has seen advances in several of the Northern irons with further upward move expected before long. All kinds of iron in excellent demand, furnace stocks decreasing and consumption increasing make a satisfactory week.

Coke is responding to the influence in good shape, demands for shipments are large and some operations are having difficulty in getting out the material which they should. Labor is scarce in most of the fields, and the summer lethargy has added to the coke makers' troubles. It would be of interest if every buyer would take pains to order in now, or in the near future, as much in the way of raw material as he could possibly accommodate, as there will be, undoubtedly, very serious transportation troubles before long which will tax the producers and railroads to the utmost and seriously inconvenience the consumer.

Southern Market's Trend Toward \$14 Iron.

BIRMINGHAM—Buyers are willingly paying \$13.50 for spot and fourth quarter iron in the South, with the furnaces unwilling to quote for the first quarter of 1910. The market is hardening to \$14 and it would not be surprising for that figure to be named at an early date for the rest of the year's delivery. One maker declares his price for the first quarter of 1910 is \$14.50. Sales have recently been made on the \$13.50 spot basis and \$14 for fourth quarter. With the railroads entering the market the upward trend cannot be resisted. The Southern operators occupy an especially strong position. They are well sold up to the fourth quarter and some into it. They have every reason to believe that there is going to be an anxious inquiry for their output for the rest of the year and for the first quarter of 1910 at an advance.

Five furnaces are now undergoing repairs and one of these will probably be making iron before the expiration of the month. The output for August will be unusually large, but a reduction will be shown in the amount of iron on the

yards, due to the heavy shipments.

No pig iron is being sold now by the Tennessee, Republic or Williamson companies, their output up to the last quarter having been booked. The absence of some of the larger companies from the field creates a lively demand among the smaller concerns.

An important event of the week was the presence in Birmingham of G. Dominco, director of the Argentine National Railways, who came here for the purpose of inspecting the rail mill of the Tennessee Coal, Iron & Railroad Company with a view to determining its capacity for turning out rails to meet the needs of the Argentine enterprises with which he is connected. The result of the visit was the placing of an order for 55,000 tons of rail, to be used in Americanizing the Argentine railways.

The resumption of numerous ore mines has added materially to the demand for soft coal and there is increasing activity in this branch of industry. T. W. Guthrie, president of the Republic Iron & Steel Company, was in the city a few days ago and following his visit it was reported that the only idle furnace of the Republic Company at Thomas would be put in repair at once and that it would be ready for the torch by October 1. The mines of this company are the scene of much activity.

The Garrett-Cromwell Engineering Company, of Cleveland, O., was awarded contract for erection of the new wire, rod and nail mill at Gadsden for the Southern Iron & Steel Company.

The Hays Rapid Tunnelling & Mining Machine Company, has been organized here, which concern owns a number of valuable patents. The officers of this company are E. W. Hays, president; H. F. Shelton, secretary.

COKE PRICES STIFFEN.

Coke prices are showing a disposition to strengthen up and are climbing with steadiness. Independent operators think that the long-awaited-for \$2 coke is an early probability. Quotations in the Connellsville region this week for strictly high grade Connellsville coke range from \$1.80 to \$2. The latter price and up to \$2.35 is being held out for by many operators, and the average price for coke during the last quarter is being quoted in almost every instance above \$2. The foundry grade is holding strong at \$2.35 and \$2.50, with a smaller amount being manufactured each week.

According to the "Courier's" tables, out of 38,483 ovens in the Connellsville district, 30,829 were in blast and 7,654 were idle during the week ending August 14, a gain of 287 ovens over the previous week. The total production

was 395,188 tons, compared with 395,664 tons the previous week.

Shipments totalled 12,477 tons, as compared with 12,688 tons the previous week. Shipments to Pittsburgh, however, showed a gain, aggregating 4,481 tons as compared with 4,310 tons the previous week.

George B. Irwin, of Uniontown, secretary of the Coke Producers' Association, in his weekly report, says:

Shipments over the three railroads to Pittsburgh and points West were 11,358 cars and the unconsigned loads reduced to 365 cars, the lowest number during the past 20 months and possibly as low as at any time during the normal conditions in the region.

The labor shortage, particularly miners, shows some little improvement, and the recent rains has removed for the present, at least, the danger of a water famine from the mines getting their supply from surface streams.

During the present week, a number of additional ovens will be put in. Orient will fire 40, the Genuine Connellsville Coke Company 40. Ovens will be put in full operation as fast as possible.

An intimation of a shortage of freight cars within a few weeks is voiced in the bi-monthly report of the American Railway Association if the present reduction in surpluses continue. During the period from March to August this year, the number of surplus cars was reduced 36,181.

It is doubtful if high grade furnace coke can be bought at the present time under \$2 per ton, even if at that price.

The size of the pays in the Connellsville region have increased 50 per cent in five weeks. During the first two weeks of August, the coke region payrolls aggregated between \$235,000 and \$250,000 as compared with \$125,000 the first two weeks in April. The H. C. Frick Coke Company's payrolls are 20 per cent higher than for the corresponding period in July.

A 40,000,000-TON ORE YEAR.

Iron ore interests express firm conviction that fully 40,000,000 tons of ore will be brought from Lake Superior to lower lake ports by the close of the present season of navigation. This announcement follows brisk buying of ore the past two weeks by Pittsburgh, Shengango and Mahoning valley pig iron producers. The further statement is made by ore sellers that only a comparatively small tonnage of strictly Bessemer ore is left for sale for this season.

Shipments for August will probably pass the 7,000,000 mark—which will be a new high mark for a single month's ore shipments.

If 40,000,000 tons of ore be brought down this season, as all available figures attest, the total shipments will nearly equal the best record of lake shipments. This was made in 1907 by a total of

41,288,755 tons. Bearing out the 40,000,000-ton prognostication is the total of shipments for July, 6,693,025 tons, the heaviest tonnage moved in that month in any year in the history of lake shipping. The nearest approach to a like July tonnage movement was 5,762,772 tons in 1906, and 5,224,620 tons in 1905. The United States Steel Corporation alone is sending to lower lake ports ore at the rate of 800,000 tons weekly, despite the lake seamen's and engineers' strike still in progress.

In the light of these estimates, it seems there would be little chance for ore-carrying railroads serving the Western Pennsylvania-Eastern Ohio-West Virginia districts to avoid smashing all car shortage and congestion records the coming winter. Evidently the Steel Corporation foresaw this condition last spring when it began breaking records on the Bessemer & Lake Erie railroad in moving ore on dock from Conneaut to Pittsburgh. Eliminating for a moment the factors of tonnage of ore on dock at lower lake ports May 1 last, 5,730,000 tons; and the probable ore in hands of furnace owners at the same date variously estimated from 7,700,000 to 8,500,000 tons, it would appear that 24,700,000 tons will be brought down by lake between August 1 and the close of navigation, usually December. For from May 1 to August 1 this year, 15,300,000 tons have been shipped out of Lake Superior mining regions, an increase of 112 per cent over the same period last year.

The number of blast furnaces using exclusively Lake Superior ore and operating on August 1 was 167. This was an addition of 40 stacks to the active list since March. The actual ore consumption of these active stacks from May 1 to the close of navigation will have been 22,000,000 tons. In July the furnaces consumed at the rate of 3,173,434 tons of ore, foreshadowing a total of 30,000,000 to the same stacks from August 1 to June 1, next year. This means that aside from the railroad movement of this ore tonnage for immediate consumption by active furnaces, 18,000,000 tons additional must be cared for on lower lake docks and forwarded in large part during the winter by rail.

Never in lake transportation history have the railroads forwarded 5,000,000 tons from lower lake ports in a winter season. Ore interests always plan to carry over at lower lake ports a winter supply of about 5,000,000 tons to insure furnaces having a supply in case of eventualities such as late opening of the navigation season the following spring, strikes, etc. It cannot be expected that furnace owners will carry much less ore on hand next winter than last, say 8,000,000 tons.

Range of Weekly Quotations of Pig Iron

PIG IRON

	Aug. 21.	Aug. 14.	Aug. 7.	July 31.	July 24.	July 17.	July 12
At Pittsburgh—							
Bessemer	16.90@17.40	16.90	16.90	16.40@16.90	16.40@16.90	16.40	16.15@16.40
Basic	16.15@16.40	16.15@16.40	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15
No. 1 Foundry	16.90@17.15	16.90@17.15	16.90@17.15	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65
No. 2 Foundry	16.15@16.65	16.15@16.65	16.40@16.65	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15
Malleable Bessemer	16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15
Gray Forge	15.15@15.65	15.15@15.65	15.40@16.15	14.90	14.90	14.90	14.65@14.90
Low Phosphorus	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90
Ferro Silicon, 50 per cent	64.00@66.00	63.50@65.00	67.00@68.00	67.00@68.00	62.00@63.00	62.00@63.00	63.00@64.00
Ferro Silicon, 10 per cent	24.00@25.00	24.00@25.00	23.50@24.50	23.50@24.50	24.00	24.00	24.00
Silicon Spiegel, 10 to 12 per cent ..	25.00@27.00	25.00@27.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00
Spiegeleisen	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00
Ferro Manganese	43.45@44.45	42.95@43.95	43.45@43.95	43.45@43.95	43.45@43.95	43.45@43.95	42.95@43.95
At Virginia Furnaces—							
Basic	14.25@14.75	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00
No. 1 X	15.00@15.50	14.50@15.00	14.50@15.00	14.50@15.00	14.00@14.50	14.00@14.50	14.00@14.50
No. 2 X	14.50@15.00	14.00@14.50	14.00@14.50	14.00@14.50	14.00	14.00	13.75@14.00
No. 2 Plain	13.75@14.50	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75
Gray Forge	13.00@13.50	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00
At Birmingham—							
No. 1, Foundry	13.50@14.00	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00
No. 2, Soft	13.50	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50
No. 2, Foundry	13.50	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50
No. 3, Foundry	12.00@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00
No. 4, Foundry	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50
Gray Forge	11.25@11.75	11.25@11.75	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00
At Philadelphia—							
No. 2X Foundry	17.00@17.50	17.00@17.50	16.50@17.00	16.50@17.00	16.00@16.50	16.00@16.50	16.50@16.75
Basic	17.00@17.50	17.00@17.50	15.50@15.75	15.50@15.75	15.50@15.75	15.50	15.50
Gray Forge	16.00@16.50	16.00@16.50	15.25	15.25	15.25	15.25@15.50	15.25@15.50

STEEL.

Tons of 2,240 lbs., at Pittsburgh—							
Bessemer Billets	24.00	24.00	24.00	24.00	23.00@24.00	23.00	23.00
Open Hearth Billets	26.00	26.00	26.00	26.00	25.00@26.00	24.00@25.00	24.00@25.00
Forging Billets	28.00	28.00	28.00	28.00	28.00	26.00@28.00	25.00@27.00
Sheet and Tin Bars	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.00@26.00	25.00@26.00	25.00@26.00
Bessemer Steel Rails	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Open-Hearth Steel Rails	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Light Steel Rails—							
25 to 45 lbs.	28.00	28.00	28.00	27.00	27.00	27.00	25.50@27.00
16 and 20 lbs.	29.00	29.00	28.00	27.00@28.00	27.00@28.00	27.00@28.00	26.50@27.00
12 and 14 lbs.	30.00	30.00	30.00	29.00	29.00	29.00	27.75@28.75
8 lbs.	31.00	31.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00
Bessemer Wire Rods	31.00	31.00	31.00	31.00	29.00@30.00	29.00	29.00
Open-Hearth Wire Rods	31.00	31.00	31.00	31.00	29.00@30.00	29.00@30.00	29.00@30.00
Muck Bar, all pig iron	27.00	27.00	27.00	27.00	27.00	27.00	27.00

FINISHED PRODUCTS.

Tons of 2,000 lbs., at Pittsburgh—							
Skelp Steel Grooved	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00
Skelp Steel Sheared	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00
Railroad Spikes	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00
Sheets, No. 28	44.00	44.00	44.00	44.00	44.00	44.00	44.00
Galvanized Sheets, No. 28	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Beams, 3 to 15 inches	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00
Beams, over 15 inches	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00
Channels, 3 to 15 inches	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00
Channels, over 15 inches	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00
Tees, 3-inch and larger	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00
Tees, 3-inch and larger	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00
Angles, 3 to 6 inches	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00
Angles, over 6 inches	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00
Tank Plate	28.00@30.00	28.00@30.00	28.00@30.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00
Boiler Plate	30.00	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00
Hoops	30.00	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00
Bands	24.00	24.00	24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00
Bessemer Steel Bars	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00
Open-Hearth Steel Bars	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00
Common Iron Bars	30.00	29.00	29.00	29.00	29.00	29.00	28.00@29.00

July 5.	June 27	June 21.	June 14.	June 7	May 29.	May 22.	May 15.	May 8.	1908 Aug. 22
16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.40@15.65	16.30@16.55
15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.15@15.40	15.15@15.40	14.90@15.15	14.90@15.15	14.90@15.15	15.40@15.65
16.40@16.65	16.40@16.65	16.15@16.40	15.90@15.16	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.40@15.65	16.15@16.40
15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.40@15.65	15.40@15.65	15.15@15.40	14.90@15.15	14.90@15.15	15.65@15.90
10.15@16.40	15.90@16.15	15.65@15.90	15.50@15.65	15.40@15.65	15.40@15.65	15.15@15.40	14.90@15.15	14.90@15.15	15.40@15.65
14.90@15.15	14.90@15.15	14.90@15.15	14.50@14.65	14.50@14.65	14.50@14.65	14.40@14.65	14.15@14.35	14.15@14.35	14.65@14.90
20.00@20.90	15.90@20.00	19.50@20.00	19.00@19.50	19.00@19.50	19.00@19.50	19.00@19.50	19.00@19.50	19.00@19.50	21.25@21.75
63.00@64.00	61.00@62.00	62.00@64.00	61.00@62.00	61.00@62.00	63.00@70.00	62.00@65.00	61.00@62.00	60.00@60.50	67.50@70.00
24.00	24.00	24.00	24.00	24.00	25.00	25.00	25.00	25.50@26.00	26.50@27.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	33.50@34.00
29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	31.00@31.50
42.95@43.95	41.95@42.45	42.45@42.95	42.45@42.95	42.45@42.95	42.45@42.95	42.00@43.00	42.00@43.00	43.00@44.00	45.00@46.00
12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.50@12.75	12.50@12.75	12.50@12.75	12.50@12.75	12.50@12.75	13.75@14.25
14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.25	14.00@14.25	14.00@14.25	14.00@14.25	14.00@14.25	14.25@14.75
13.75@14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.50@13.75	13.50@13.75	13.50@13.75	13.50@13.75	13.50@13.75	13.75@14.25
13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.50	13.25@13.50	13.25@13.50	13.25@13.50	13.25@13.50	13.25@13.75
12.75@13.00	12.75@13.00	12.75@13.00	12.50@12.75	12.00@12.25	12.00@12.25	12.00@12.25	12.00@12.25	12.50@12.75	12.25@12.75
12.00@12.50	12.00@12.50	11.75@12.00	11.75@12.00	11.75@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.75@12.00	12.50@13.00
11.50@12.00	11.50@12.00	11.50@11.75	11.50@11.75	11.50@11.75	11.25@11.50	11.25@11.50	11.25@11.50	11.25@11.50	12.50@13.00
11.50@12.00	11.50@12.00	11.25@11.50	11.25@11.50	11.25@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.25@11.50	12.00@12.50
11.00@11.50	11.00@11.50	10.75@11.00	10.75@11.00	10.75@11.00	10.50@11.00	10.50@11.00	10.50@11.00	10.75@11.00	11.50@12.00
10.50@11.00	10.50@11.00	10.25@10.50	10.25@10.50	10.25@10.50	10.00@10.50	10.00@10.50	10.00@10.50	10.50@10.75	11.00@11.50
10.50@10.75	10.50@10.75	10.25@10.50	10.25@10.50	10.25@10.50	10.00@10.50	10.00@10.50	10.00@10.50	10.50@10.75	10.25@10.75
16.50@16.75	16.75@17.00	16.75@17.00	16.75@17.00	16.75@17.00	16.75@17.00	16.00@16.25	16.00@16.25	16.00@16.25	16.50@17.00
15.50	15.50	15.50	15.50	15.50	15.50	15.00@15.25	15.00@15.25	15.00@15.25	15.25@15.50
15.25@15.50	15.25@15.50	15.25@15.50	15.00@15.25	15.00@15.25	15.00@15.25	14.75@15.00	14.75@15.00	14.75@15.00	15.25@15.50
23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	25.00
23.50@24.00	23.50@24.00	23.00@24.00	23.00	23.00	23.00	23.00	23.00	23.00	25.00
25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	27.00
25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	25.50	25.50	25.50	25.50	27.50
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.00
25.50@27.00	25.50@27.00	26.00@27.75	26.00@27.75	25.00@27.75	25.00@27.75	25.00@27.75	25.00@27.75	25.00@27.75	28.00@29.00
26.50@27.00	26.50@27.00	26.75@27.75	26.75@27.75	26.75@27.75	26.75@27.75	26.75@27.75	26.75@27.75	26.75@27.75	29.00@31.00
27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	32.00@33.00
29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	36.00@37.00
29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	33.00
29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	30.00	30.00	30.00	28.00	30.00	34.00
27.00	27.00	27.00	25.00	25.00	25.00	25.00	25.00	25.00	25.50
26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	25.00@26.00	24.00@25.00	29.00@30.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	26.00@27.00	30.00@32.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	33.00@34.00	33.00@34.00	33.00@34.00	34.00@36.00
44.00	44.00	44.00	44.00	44.00	44.00	45.00	45.00	45.00	50.00
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	71.00
26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	25.00@26.00	32.00
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	27.00@28.00	34.00
26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	25.00@26.00	32.00
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	27.00@28.00	34.00
27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	26.00	33.00
27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	26.00	32.00
26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	25.00@26.00	32.00
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	27.00@28.00	34.00
26.00@27.00	25.00@26.00	25.00@26.00	26.00	26.00	26.00	28.00	28.00	27.00@28.00	34.00
28.00	28.00	28.00	28.00	28.00	28.00	26.00	26.00	25.00@26.00	32.00
28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00	28.00	28.00	34.00
24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	28.00@30.00	36.00
24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00	24.00	23.00@24.00	28.00
24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00	24.00	24.00	24.00	23.00@24.00	28.00
29.00	29.00	29.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	28.00

STEEL PLATES.

Base prices, tank quality, ¼-in. thick,
per 100 lbs., f. o. b., Pittsburgh:

6¾ to 100 inches wide\$1.30

Extras over base price—

3-16 inch thick .....	.10
Gauges 7 and 8 .....	.15
Gauge 9 .....	.25
Gauges 10 and 11 .....	.25
Circles .....	.20
Sketches .....	.10
Boiler and Flange quality .....	.10
Marine Steel .....	.40
Widths over 100, to 110 in .....	.05
Widths over 110, to 115 in .....	.10
Widths over 115, to 120 in .....	.15
Widths over 120, to 125 in .....	.25
Widths over 125, to 130 in .....	.50
Widths over 130 in	1.00

IRON AND STEEL SCRAP.

Old steel rails, re-rolling..	\$17.50	
Old steel rails, remelting..	16.50	17.00
Steel axles	20.00	20.50
Heavy melting scrap	16.50	17.00
Low phosphorus	20.00	20.50
Sheet scrap	15.00	15.25
No. 1 wrought scrap	16.50	16.75
Machine shop turnings ..	12.00	12.50
Cast borings	10.00	10.50
No. 1 cast	15.25	15.75
Old car wheels	16.25	16.50
Old iron rails	18.25	18.75
Axle turnings	13.50	14.75
Railway malleable	15.50	16.00

TIN AND TERNE PLATES.

Official prices, f. o. b., Pittsburgh—
Coke tins:

14x20, I. C.	\$3.55
14x20, 100 lbs.	3.40
14x20, 95 lbs.	3.35
14x20, 90 lbs.	3.30

Charcoal tins:

A Grade, 14x20, I. C.	4.15
A Grade, 14x20, 100 lbs.	4.00

Ternes:

20x28, I. C.	6.80
20x28, 200 lbs.	6.50

STEEL RAILS.

Fifty pounds and Heavier—

500-ton lots and over	\$28.00
Car load lots	30.00
Less than car load lots	32.00

Light Rails—

12 and 14 pounds	\$30.00
16, 20 and 25 pounds	28.00
30 and 35 pounds	28.00
40 and 45 pounds	28.00

Relaying Rails

Subject to inspection, f. o. b. Pitts-		
burgh:		
Stand'd 50 lbs. & heavier..	\$22.00	\$22.50
25 to 40 lbs.	23.00	23.50
16 to 20-pound rails	24.00	24.50
12-pound rails	25.00	26.00

STEEL SHEETS.

Official prices, per 100 lbs., f. o. b.,
Pittsburgh—

Gauge.	Black.	Galv.
30	\$2.35	\$3.60
29	2.25	2.35
28	2.20	3.25
27	2.15	3.05
25-26	2.10	2.85
22-24	2.05	2.65
17-21	2.00	2.50
15-16	1.95	2.40
13-14	1.90	2.30

Blue Annealed.

10 and heavier	\$1.65
11-12	1.70
13-14	1.75
15-16	1.85

Corrugated Roofing.

Per square, 28 gauge, f. o. b. Pitts-	
burgh—	
Painted	\$1.55
Galvanized	2.80

WIRE AND NAILS.

Prices to jobbers in car load lots, per
100 lbs.; retailers 5 cents additional:

Wire nails	\$1.80
Plain wire	1.60
Painted barb wire	1.80
Galvanized wire	2.10

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per
cent pure are held at 24c per pound in
ton lots.

For small lots of 100 pounds and over
advances of 3c per pound are charged.

Rods and wire.....base price 32 cents
Sheetsbase price 34 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

	Per Ton.
Mine-run	\$1.10@1.20
¾-inch lump	1.20@1.30
1¼-inch lump	1.30@1.40
3-inch lump	1.55@1.65
1¼-inch nut	1.10@1.20
¾-inch slack .....	.55@.65

At Buffalo—

	Pgh.	Frep't
Mine-run	\$2.35	2.05
¾-inch lump	2.45	2.15
1¼-inch lump	2.55	2.25
¾-inch slack	1.85	1.70

At Cleveland—

	Pgh.	No. 8
Mine-run	\$2.10	\$1.80
¾-inch lump	2.20	1.90
1¼-inch lump	2.25	2.00
1¼-inch nut	2.10	1.80
¾-inch slack	1.55	1.45

At Detroit—

	Pgh.	No. 8
Mine-run	\$2.50	\$2.05
¾-inch lump	2.60	2.15
1¼-inch lump	2.70	2.25
1¼-inch nut	2.50	2.05
¾-inch slack	2.00	1.65

At Chicago—

	Pgh.	No. 8
Mine-run	\$3.00	\$2.55
¾-inch lump	3.10	2.65
1¼-inch lump	3.20	2.75
1¼-inch nut	3.00	2.55
¾-inch slack	2.45	2.25

MERCHANT PIPE.

Base discounts, car load lots, subject
to one point and 5 per cent extra to
large jobbers.

	Steel	
	Black.	Galv
¾ and 1¼-inch .....	.72	.56
¾-inch .....	.73	.59
½-inch .....	.76	.64
¾ to 6-inch .....	.80	.70
7 to 12-inch .....	.75	.66
Extra strong plain ends—		
¾ to ¾-inch .....	.65	.53
½ to 4-inch .....	.72	.60
4½ to 8-inch .....	.68	.56
Double extra strong—		
½ to 8-inch .....	.61	.50

WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe
car load prices to consumers; prices to
jobbers one point and 5 per cent.

¾-inch .....	.69	..
¾ and ¾-inch .....	.70	.56
½-inch .....	.73	.61
¾ to 6-inch .....	.77	.67
7 to 12-inch .....	.72	.57

Extra Strong and Plain Ends—

¾, ¾ and ¾-inch .....	.62	.50
½ to 4-inch inclusive .....	.69	.57
4½ to 8-inch, inclusive65	.53

Double Extra Heavy plain Ends—

½ to 8-inch, inclusive58	.47
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BOILER TUBES.

	Steel	Iron.
1 to 1½ inches50	.45
1¾ to 2¼ inches62	.45
2½ inches64	.50
3¾ to 5 inches .....	.70	.57
6 to 13 inches .....	.62	.45

Less than car load lots, two points less.
2½ inches and smaller, over 18 feet, 10
per cent, net extra.
2¾ inches and larger, over 22 feet, 10
per cent net extra.

MERCHANT STEEL.

Cold rolled and ground shafting, 60
per cent off, car load lots; 56 per cent
off less than car load lots; delivered in
base territory:

Planished Tire Steel	\$1.40@1.50
Iron finish, up to 1½x½ in. ..	1.35@1.45
Iron finish, 1½x½ in. and over	1.20@1.30
Toe Calk Steel	1.70@1.80
Railway Spring Steel	1.75@1.85
Cutter Shoe	1.95@2.05
Flat Sleigh Shoe	1.55@1.65
Crucible Tool Steel	7.00@8.00
Open-Hearth Spring Steel ..	2.05@2.30

Freight Rates On Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig Iron, from Virginia furnaces to Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	\$2.35	\$3.60	\$3.20	\$2.35	\$3.30	\$3.35
Bristol		3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.35	3.60	3.20	3.00	3.95	4.00
Kayula, Ivanhoe, Rural Retreat ...	2.35	3.60	3.20	3.40	4.35	4.40
Pulaski, E. Radford, Max Meadows.	2.35	3.60	3.20	3.25	4.20	4.25

Pig Iron from Birmingham, Ala., tons of 2,240 lbs. to—

Boston, by water	\$4.60
Chicago	4.35
Cincinnati and Ohio River	3.25
Cleveland	4.35
Milwaukee and Northwest	4.75
New York, all rail	5.95
New York, rail and water	4.25
Philadelphia, all rail	5.00
Philadelphia, rail and water	4.00
Pittsburgh	4.90
St. Louis	3.75
To Pittsburgh from—	
Dunbar Furnaces .....	.85
Kittanning Furnaces .....	.60
Scottdale Furnaces .....	.85
Valley Furnaces .....	.90
Wheeling .....	.90
Valley Furnaces to—	
Cleveland .....	.90

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	Billets.
Baltimore	\$2.15	\$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville .....	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va. ....	.90	1.00
Youngstown .....	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango Valleys ..	1.00	
Wheeling	1.00	

COKE.

From Connellsville region, per 2,000 pounds to—	
Boston	\$3.50
Buffalo	1.90
Baltimore	2.15

FINISHED PRODUCTS.

Finished Steel Products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire, nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—

Albany .....	.16
Buffalo .....	.11
Boston .....	.18
Baltimore .....	.14½
Canandaigua .....	.13½
Cleveland .....	.10
Columbus .....	.12
Cincinnati .....	.15
Chicago .....	.18
Harrisburg .....	.14½
Louisville .....	.18
New York .....	.16
Norfolk .....	.20
Philadelphia .....	.15
Rochester .....	.11½
Richmond .....	.20
Scranton .....	.15
St. Louis .....	.23
Washington .....	.14½

To Pittsburgh from—

Mahoning and Shenango Valleys..	.05
Wheeling .....	.05

COAL.

Coal Rates from Mines—

To Ashtabula	\$1.00
To Allegheny, Pan'dle Ft. W. trk...	.43
To Allegheny, West Penn tracks..	.48
To Allegheny, B. & O. ....	.35
To Pittsburgh, P. R. R. Main Line..	.43
To Pittsburgh, B. & A. V. Div...	.48
To Pittsburgh, B. & O. ....	.33
To Valleys .....	.70
To Buffalo	1.25
To Cleveland	1.00
To Detroit	1.40
To Chicago	1.90
To New York, gross ton	2.25
To Philadelphia, gross ton	2.00

From Freeport—

To Buffalo	1.10
For Lake Shipments— Cargo. Fuel.	
To Ashtabula .....	.88
To Cleveland .....	.88
To Erie .....	.88

West Virginia rates from mines—

To Chicago	1.90
To seaboard points, gross ton	1.80

From No. 8, of Ohio—

To Cleveland .....	.90
To Chicago	1.65
To Detroit	1.15

TIN PLATE.

Per 100 lbs., Pittsburgh to—

	C.L.	L.C.L.
Boston, Mass	18	21
Albany, N. Y.	16	19
Baltimore, Md.	14½	17½
Birmingham, Ala.	41	68
Cleveland, O.	10	13
Columbus, O.	12	15
Cincinnati, O.	15	18
Concord, N. H.	18	21
Charlotte, N. C.	39	61
Charleston, S. C.	33	70
Charleston, rail and water..	23½	31
Covington, Ky.	15	18
Chattanooga, Tenn	33	65
Chicago, Ill.	18	21
Canadaigua, N. Y.	13½	16
Des Moines, Ia.	37½	48½
Detroit, Mich	15	18
Denver, Mich	84	118
Dover, Del.	17	20
Buffalo, N. Y.	11	13
East St. Louis	22½	26
Hartford, Conn.	18	21
Indianapolis, Ind.	17	19½
Louisville, Ky.	18	21
Montpelier, Vt.	21	24
Minneapolis, Minn.	32	42
New York	16	19
Norfolk, Va.	20	24
Natchez, Miss.	32	61
Portland, Me.	18	21
Providence, R. I.	18	21
Philadelphia, Pa.	15	18
Richmond, Va.	20	24
Rochester, N. Y.	11½	13½
Syracuse, N. Y.	13½	16
St. Louis, Mo.	22½	26
Terre Haute, Ind.	18	21
Topeka, Kas.	54½	68
Trenton, N. J.	16	19

Railroad Affairs Displayed for Manufacturers and Shippers

WORKING SOUTH FROM BUFFALO.

Buffalo & Susquehanna railroad officials are taking up plans for the extension of that system. For the present most of the actual construction will be on the Buffalo end of the road, but it is stated that surveys have been completed and arrangements are being made for improvements to the Pittsburgh end of the new coal road. For the last several weeks agents of the Buffalo & Susquehanna have been working in Indiana and Westmoreland counties. The company now holds options on much property in Indiana county and it is understood that a freight classification yard and shops will be built north of Buffalo.

The Buffalo & Susquehanna interests have incorporated the Frontier & Western with a capital of \$500,000 to build a standard gauge railroad connecting Tonawanda, the Falls branch of the New York Central, the Buffalo Frontier and the International bridge at Buffalo. Among the directors of the new company are Charles Goodyear, president of the Buffalo & Susquehanna; Arthur E. Bissell, Edward Michael and John Scatherd, of Buffalo, and Edward W. Hatch, of New York. Actual construction on the proposed line will be started within the next two months.

Rebuilding of the Buffalo & Susquehanna south from Juneau Junction, where connection is made with the Buffalo, Rochester & Pittsburgh, to Sagamore, is to be taken up shortly. This line was built several years ago to develop coal properties. The heavy coal and ore traffic has necessitated heavier rails and larger cars and locomotives. For this reason many of the heavy grades and curves are to be eliminated and it will be necessary to rebuild practically the road the entire distance south from Juneau Junction. Plans for this work have been completed.

FOR NEW YARDS.

New yards and shops are to be located along the Franklin & Clearfield extension of the Lake Shore. It is said that officials of the railroad have made trips over the line for the purpose of locating these yards.

The Franklin & Clearfield has been completed to Brookville, Pa., but it is not likely that the road will be in operation all the way to Clearfield for some time.

One of the sites being considered for a yard is said to be near Dubois, Pa.

TWO MONTHS' BUYING BY RAILROADS.

In showing the distribution of equipment orders since the boom in the equipment business started, the date, June 1, has been chosen, as the rush of buying did not start until then, although orders came in spasmodically for the two previous months. The following table gives the roads ordering equipment, type of equipment and the company receiving the order:

	Pass. Cars	Frgt. Cars	Loco.
Alabama Great Southern	15	750	20
Pennsylvania Lines West	47	3,500	...
Pennsylvania Lines East .....	...	4,485	...
Pennsylvania Lines East and West (built by Pullman Company for lease)	500	.....	...
B. & M.	50	.....	...
Northern Pacific .....	...	1,800	...
Harriman Lines	184	4,945	105
Chicago & Northwestern	96	2,000	80
Great Northern .....	...	1,000	...
Lehigh Valley	155	.....	...
Chicago Railways	350	.....	...
Lehigh Canal & Navigation .....	...	35	...
Interborough Rapid Transit	150	.....	...
New York Central .....	...	2,000	...
Baltimore & Ohio	475	2,600	...
Northern Pacific .....	...	1,800	...
Long Island	100	.....	...
Central Railroad of New Jersey .....	...	1,500	...
Buffalo, Rochester & Pittsburgh .....	...	2,000	...
Denver & Rio Grande .....	...	4,100	30
Atchison	177	.....	22
St. Louis & San Francisco	36	250	15
St. Louis & Southwest .....	...	500	...
C., B. & Q. ....	...	3,500	...
Chesapeake & Ohio .....	...	4,500	...

It will be seen from the above that the Pennsylvania is the largest buyer, with the Harriman lines, Chesapeake & Ohio and Denver & Rio Grande next in order with over 4,000 cars each. The distribution of the orders is as follows:

	Pass. Cars	Frght. Cars	Loco.
American Car & Foundry	742	8,000	...
Standard Steel Car	40	6,135	...
Cambria Steel .....	...	2,000	...
Pullman Company	582	1,800	...
Pressed Steel Car	155	2,000	...
American Locomotive .....	...	.....	126
Baldwin .....	...	.....	177
Total orders, 26 railroads	1,519	19,535	303

NEW WORK BY PENNSY.

The Pennsylvania Lines West has begun important double-tracking work and grade revision on the Pittsburgh, Cincinnati, Chicago & St. Louis, to facilitate the movement of traffic between Columbus and Chicago, and between Indianapolis and St. Louis. The double-tracking of 99 miles of the road between Horatio and Onward will involve 1,500,000 yards of excavation and the removal of 20 grade crossings. It is designed to decrease the maximum grade to .3 of one per cent. The improvements are made necessary by the prospective increase in tonnage into and out of Gary. The double-tracking of 60 miles between Richmond and Irvington, Ind., involves immense changes in grades. The work on these two sections will involve an

expenditure of about \$7,000,000. Parts of these new contracts have been let to H. E. Culbertson, of Cleveland, Ohio, the Lorimer & Gallagher Construction Company, of Chicago, C. A. Sims and the Drake & Stratton Company, both of Philadelphia. Bids are in on the remainder of the work and it is expected that these contracts will be awarded within the next 10 days.

TO BUILD LOFTY BRIDGE.

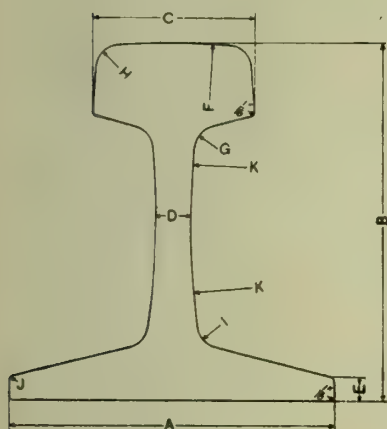
The Cincinnati Southern has awarded a \$125,000 contract for the removal of 200,000 cubic yards of earth in preparation for the construction of a new bridge over the Kentucky river at High Bridge, Ky. The new bridge will be 306 feet above low-water mark, one of the highest in the world.

A TABLE OF COMPARISONS OF THE DETAILS OF RECENT RAIL SECTIONS.

The table given herewith, comparing in detail the several prominent rail sections which have been brought out recently, was compiled by Robert W.

Hunt & Company, Chicago. It includes the American Railway Association sections A and B, from 70 to 100 pounds, and the Canadian Pacific, the Santa Fe,

the Pennsylvania, the Great Northern, Canadian Northern and Dudley sections. The accompanying data is published by courtesy of Robert W. Hunt & Co.:



SECTION	WEIGHT	TYPE	A	B	C	D	E	F	G	H	I	J	K	SLOPE OF HEAD	SPRUE BAR ANGLE	Z HEAD	Z WEB	Z BASE
ARA	100	A	5 $\frac{32}{64}$	6	2 $\frac{18}{64}$	3 $\frac{36}{64}$	2 $\frac{24}{64}$	14	6 $\frac{6}{16}$	6 $\frac{6}{16}$	6 $\frac{6}{16}$	1 $\frac{1}{16}$	14	1 $\frac{1}{16}$ TO 1	4 TO 1	369	234	397
"	"	B	5 $\frac{2}{64}$	5 $\frac{41}{64}$	2 $\frac{12}{64}$	3 $\frac{36}{64}$	3 $\frac{31}{64}$	12	5 $\frac{5}{16}$	6 $\frac{6}{16}$	5 $\frac{5}{16}$	1 $\frac{1}{16}$	12	3°	13°	402	192	406
"	90	A	5 $\frac{8}{64}$	5 $\frac{10}{64}$	2 $\frac{36}{64}$	3 $\frac{36}{64}$	2 $\frac{24}{64}$	14	6 $\frac{6}{16}$	6 $\frac{6}{16}$	6 $\frac{6}{16}$	1 $\frac{1}{16}$	14	1 $\frac{1}{16}$ TO 1	4 TO 1	362	240	398
"	"	B	4 $\frac{49}{64}$	5 $\frac{17}{64}$	2 $\frac{36}{64}$	3 $\frac{36}{64}$	3 $\frac{31}{64}$	12	5 $\frac{5}{16}$	6 $\frac{6}{16}$	5 $\frac{5}{16}$	1 $\frac{1}{16}$	12	3°	13°	401	192	407
"	80	A	4 $\frac{40}{64}$	5 $\frac{8}{64}$	2 $\frac{32}{64}$	3 $\frac{33}{64}$	2 $\frac{24}{64}$	14	6 $\frac{6}{16}$	6 $\frac{6}{16}$	6 $\frac{6}{16}$	1 $\frac{1}{16}$	14	1 $\frac{1}{16}$ TO 1	4 TO 1	388	210	402
"	"	B	4 $\frac{28}{64}$	4 $\frac{60}{64}$	2 $\frac{28}{64}$	3 $\frac{35}{64}$	3 $\frac{31}{64}$	12	5 $\frac{5}{16}$	6 $\frac{6}{16}$	5 $\frac{5}{16}$	1 $\frac{1}{16}$	12	3°	13°	388	195	417
"	70	A	4 $\frac{16}{64}$	4 $\frac{48}{64}$	2 $\frac{24}{64}$	3 $\frac{32}{64}$	2 $\frac{24}{64}$	14	6 $\frac{6}{16}$	6 $\frac{6}{16}$	6 $\frac{6}{16}$	1 $\frac{1}{16}$	14	1 $\frac{1}{16}$ TO 1	4 TO 1	393	218	389
"	"	B	4 $\frac{3}{64}$	4 $\frac{35}{64}$	2 $\frac{24}{64}$	3 $\frac{33}{64}$	2 $\frac{29}{64}$	12	5 $\frac{5}{16}$	6 $\frac{6}{16}$	5 $\frac{5}{16}$	1 $\frac{1}{16}$	12	3°	13°	401	195	404
CANADIAN PACIFIC	85		5	5 $\frac{8}{64}$	2 $\frac{32}{64}$	3 $\frac{36}{64}$	2 $\frac{24}{64}$	8	6 $\frac{6}{16}$	4 $\frac{4}{16}$	6 $\frac{6}{16}$	4 $\frac{4}{16}$	8	2 $\frac{1}{2}$ AT TOP	4 TO 1	367	222	410
SANTA FE	85		4 $\frac{56}{64}$	5 $\frac{24}{64}$	2 $\frac{32}{64}$	3 $\frac{36}{64}$		14	6 $\frac{6}{16}$	6 $\frac{6}{16}$	6 $\frac{6}{16}$	1 $\frac{1}{16}$	14	1 TO 16	4 TO 1	370	227	402
PENN	100		5	5 $\frac{44}{64}$	2 $\frac{43}{64}$	3 $\frac{36}{64}$	3 $\frac{34}{64}$	10	5 $\frac{5}{16}$	7 $\frac{7}{16}$	5 $\frac{5}{16}$	1 $\frac{1}{16}$	10	2 $\frac{1}{2}$ AT TOP	15 TOP 13 BASE	410	186	404
"	85		4 $\frac{40}{64}$	5 $\frac{8}{64}$	2 $\frac{32}{64}$	3 $\frac{34}{64}$	3 $\frac{30}{64}$	10	4 $\frac{4}{16}$	7 $\frac{7}{16}$	4 $\frac{4}{16}$	1 $\frac{1}{16}$	10	0	15 TOP 13 BASE	422	178	400
GREAT NORTHERN	90		5	5 $\frac{24}{64}$	2 $\frac{40}{64}$	3 $\frac{40}{64}$		14	6 $\frac{6}{16}$	10 $\frac{10}{16}$	6 $\frac{6}{16}$	1 $\frac{1}{16}$	14	5°	13°	366	233	401
CANADIAN NORTHERN	80		5	5	2 $\frac{36}{64}$	3 $\frac{35}{64}$	2 $\frac{21}{64}$	8	6 $\frac{6}{16}$	4 $\frac{4}{16}$	6 $\frac{6}{16}$	4 $\frac{4}{16}$	8	2 $\frac{1}{2}$ AT TOP	13°	392	213	395
DUDLEY	100		5 $\frac{32}{64}$	6	3	3 $\frac{38}{64}$		14	6 $\frac{6}{16}$	5 $\frac{5}{16}$	5 $\frac{5}{16}$	1 $\frac{1}{16}$	14	1 TO 16	4 TO 1	412	242	345
"	85		5	5 $\frac{16}{64}$	2 $\frac{14}{64}$	3 $\frac{34}{64}$		14	6 $\frac{6}{16}$	5 $\frac{5}{16}$	5 $\frac{5}{16}$	1 $\frac{1}{16}$	14	1 TO 16	4 TO 1	454	210	335

ELECTRIC ENGINE TESTS BY PENNSY.

The second of the two trial electric engines built at the Juniata shops of the Pennsylvania railroad was turned out August 16, and was brought to the East Pittsburgh works of the Westinghouse Electric & Manufacturing Company. The engine is the same type as the one completed a few weeks ago, and will be used on the Eastern division after it is given a thorough test on the main line.

An executive of the Pennsylvania said that if the tests to be made with the new electric engines are satisfactory an order for 25 electric locomotives will be given before October 1. The official intimated that the order would be placed with the Juniata shops of the Pennsylvania. This will be one of the largest single orders for electric engines ever placed, and is taken as an indication that the Pennsylvania intends to use electricity instead of steam for suburban passenger traffic at practically all the more important terminals along the system.

Gasoline Motors a Possibility.

It is reported that railroads handling suburban business in Pittsburgh are considering gasoline motor cars. The gasoline type may be given a test in handling the Pennsy travel in Pittsburgh. Some time ago executives at Philadelphia suggested that one of the gasoline motors used on the Eastern roads be turned over to the Pittsburgh division lines to be used as an experiment. It was practically agreed to test the car on the

line from Blairsville Intersection to Indiana, Pa., but this plan was abandoned. It is believed that in connection with a loop service now under consideration for Pittsburgh the motor could be made feasible.

Gasoline Cars in Ohio.

Construction work was begun on August 16, near Ashtabula, O., on the new Lake Erie & Youngstown road. The work is being done by the Stanley Contracting Company, of Conneaut, Ohio, which is headed by W. F. Stanley, one of the promoters of the new line.

This road will cross the northern part of the State, which hitherto has been unbroken by steam or trolley lines, and it will cater largely to the agricultural patronage. The road will be equipped with gasoline cars.

Tom Johnson's Monorail.

Engineers at work on plans for the two-mile stretch of monorails near Schenectady, N. Y., that was to have been used in experimenting with the 500 miles per hour magnetic railroad invented by Mayor Tom L. Johnson several years ago have found that the cost of the experiment would run to \$1,000,000 or more. This has halted the work, as the General Electric Company does not wish to assume the entire burden.

Some time ago the suggestion was made that a pool be formed for the purpose of fitting out the two miles of rails, but this step has not yet been taken.

COPPER FOR RAILROADS.

NEW INTERURBAN PROJECTS.

Projectors of the new Rochester & Mars (Pa.) Electric Railway, plans for which were announced some months ago, are making inquiries for power house contracts and construction materials. The line is to extend from Rochester, Beaver county, to Mars, in Butler county, 17 miles. Pittsburgh men are interested in the enterprise, former City Treasurer D. R. Torrence being one of the active promoters. It will cut the distance between Beaver and Butler almost in half, and with the connection at Mars with the Pittsburgh & Butler Electric railroad, a through car service will be established from Butler to as far south as Wheeling, W. Va. The road will cost approximately \$400,000. The distance between Rochester and Butler by this route will be but 33 miles, while now it is nearly 60 miles by steam road and train service is very uncertain.

There will be little grading required, and but one or two small bridges necessary. In fact, the line promises to be one of the lowest costs in construction of any in the Pittsburgh district.

To Build 20-Mile Link.

Financial men within the past week closed arrangements for a new electric road between Ellwood City, Pa., and town of Slippery Rock with a connection extending from the latter town to Grove City. The company is incorporated as the Ellwood City & Wurtemburg Street railway. It is proposed to start work shortly on the construction of the line for the entire distance between Ellwood and Slippery Rock. It was proposed at first to build only from Ellwood to Wurtemburg, a distance of about three miles. It is now the purpose of the company to construct a line as far as the town of Slippery Rock, a distance of over 20 miles.

The company claims to have abundant financial backing. The electric road between Slippery Rock and Grove City will be managed by an entirely different company, but direct connection will be afforded from Ellwood City clear through to Grove City.

Trolley Loop Line.

Manning Stores, president of the Pittsburgh, McKeesport & Westmoreland Street Railway Company, which operates a line from McKeesport to Irwin, is authority for the statement that the company was preparing plans for an extension of that road across the country from Irwin to Monessen on the Monongahela river and back to McKeesport, making a belt line about 45 miles long.

The present road is being improved and made suitable for heavier cars, and

when the entire work is completed, about \$2,000,000 will have been expended in the enterprise. The construction work will begin when franchises and rights of way are secured.

Ohio Capital in the West.

Ohio capital is interested in a new trolley project in Oklahoma, where a charter has been issued to the Enid Central Traction Company, with \$1,000,000 capital stock, which proposes to surround the city of Enid, Okla., with a network of interurban lines. The incorporators are M. T. McMahon and J. M. Smith, of Toledo, Ohio; W. H. Stewart, R. W. Whittinghill and C. E. Burkhardt, of Enid. The charter provides for building an interurban south from Enid to El Reno first and later to Lawton, Chicksaw, Kingfisher, Cherokee, Alva, Pond Creek, Medford, Blackwell and Guthrie.

Ohio-Indiana Line.

The Ft. Wayne & Toledo Electric Railway is making location maps and profiles for an electric railway from Ft. Wayne and Maysville, Ind., to Hicksville, Bryan and Toledo, O., a distance of 42 miles. It is expected that construction will be started about September 15, by the Keystone Construction Company, Indianapolis, which has the contract to build the road. The railway will be standard gauge and will be operated by the overhead trolley system. The power will be furnished by the Toledo & Indiana Railway.

PREPARING FOR ORE RUSH.

Improvement work now under way at Conneaut Junction indicates that the Bessemer is preparing to greatly enlarge its storage capacity at that point, and thereby increase its ability to handle the ore unloaded at Conneaut harbor. The right of way is being widened at that point, and the engineering corps are surveying adjoining property, with an evident view of installing many additional tracks.

The construction work is under way between Conneaut Junction and Craneyville, where at the time the road was built an immense amount of gravel was excavated for use as ballast. Most of the large space east of the tracks has since been filled in and many storage tracks laid, and the remaining portion of the hole is being filled with earth excavated by steam shovels. Night crews are being worked on the improvement.

More Tracks in Ore Fields.

The building of a new section of track for the Duluth, South Shore & Atlantic Railway Company, in the vicinity of the Negaunee (Mich.) mines of the Cleve-

land-Cliffs Iron Company, has been begun. The dipping of ore bodies has made it necessary to shift the railroad routes. Many are of the opinion that it will not be many years before the Chicago & Northwestern will also be obliged to make some changes in its main line passing through that territory, as the ore bodies come up dangerously near the tracks.

The Cleveland-Cliffs ore bodies still to be removed dip toward each other. It will not be long before the company will begin the removing of the pillars and let down the surface, which is the safest and most economical plan of mining. The removal of the pillars from these mines will also necessitate a change in the main highway leading to Marquette, though it is not expected that this will have to be done for at least a few years.

LARGE TERMINAL PROJECTS CRYSTALIZING.

This seems to be the year for large terminal projects by the railroads. With the letting of contracts for the \$13,000,000 Union Station terminal at Kansas City, come reports of the virtual adoption of preliminary plans for a \$30,000,000 terminal and loop project in Chicago; the drawing up of preliminary contracts for the belt line and terminal stockyards scheme at Buffalo; the perfection of the terminal agreement by the railroads entering Louisville, which assures the Union station there, and new terminal plans at a number of smaller cities in the East. Summarized, the plans include the following:

Kansas City—Proposals being received for preliminary work on 6-track terminal, to cost \$13,000,000 pending referendum vote by the people. Ground to be broken on new site November 1, if popular vote succeeds. Contract for terminal bridge already let.

Chicago—Six roads now using Polk street depot have agreed on plans for 28-track terminal, to cost \$30,000,000, outside the loop district, preferably at State and Twelfth streets. Negotiations on with roads now using LaSalle and Harrison street stations to join the project. Included in the plan is the utter abandonment of all freight terminals in the district adjacent to the loop and the establishment of larger terminals further south.

Louisville—Final plans for a Seventh street depot to supplant the recently-burned structure, have been agreed on, and contract signed, by four railroads. Signing the agreement were the Illinois Central, the Southern, the Big Four, the Baltimore & Ohio Southwestern. Work is to begin within 90 days.

Buffalo—Public Service commission

has authorized the Buffalo, Frontier & Terminal Railway to build a belt line about the city; proposals for preliminary work now pending. Farmers & Drovers, Stockyard Company broke ground this month for a \$1,000,000 stock yard at Cheektowaga, just outside the city line. Concrete and steel buildings will be erected. The location is contiguous to the New York Central, the Lehigh Valley, the Lackawanna and the Erie Railroads, and will be tapped by the new terminal belt line. The yards will occupy 42½ acres.

Memphis—Opposition by the Louisville & Nashville and Nashville, Chattanooga & St. Louis Railroads to plans for the new terminal station led to the announcement on August 12 by representatives by all roads in the Memphis Terminal Company of the abandonment of the project. The proposed terminal was to have housed six roads. An action is to be brought against the Memphis Terminal Company by the city, to compel the specific performance of the terminal agreement. The State Railroad Commission is urging a compromise plan on the railroads.

Huntington, W. Va.—Chesapeake & Ohio will erect a series of new passenger and freight terminals here, and new passenger depots at other points in West Virginia, the expenditure totalling \$5,000,000.

Utica, N. Y.—Central Hudson will let first contracts September 15 for new terminals, freight yards and passenger depots here, on plans finally approved by the Public Service Commission. Total expenditure will be about \$2,000,000.

Springfield, O.—Work will begin September 1 on new terminal and station for Ohio Electric Railway Company here, in accordance with new agreement entered into with city council.

Most of the new projects detailed above will be well under way by January 1, with the possible exception of the Chicago Terminal, on which much negotiation will probably be necessary, though the ultimate result seems fairly certain.

Southwestern Ohio traction interests have begun negotiations for a central traction terminal in Cincinnati. The companies joining the movement are the Cincinnati Traction Company interests; the Southwestern Ohio Traction Company; Springfield, Wilmington and Cincinnati Traction Company, and the Queen City Traction Terminal Company.

NEW ROUTE TO SEABOARD.

Announcement has been made at Norfolk, Va., that the Carolina, Clinchfield & Ohio will be completed to Elkhorn City, Ky., where it will connect with the Chesapeake and Ohio, within the next

three months, and that the promoters of the project have definitely decided to extend the line from that point, following one of the forks of the Sandy, to connect with the Norfolk & Western, a distance of about 25 miles. This will take the road through 285 miles of the richest mineral and timber country in America, much of which is undeveloped. The road is being promoted by New York capitalists, who are the direct representatives of interests closely allied with the Seaboard Air Line.

NEW CONSTRUCTION.

Hamilton, O.—The Imperial Motor Car Company, of Hamilton, has been incorporated for the purpose of erecting a plant for the manufacture of automobiles. A. G. Rentschler and Charles U. Carpenter, of Hamilton, are interested.

Milwaukee, Wis.—The Sterling Engineering & Construction Company, 603-606 Caswell block, will build for itself a reinforced concrete light manufacturing, office and mercantile building, 53x150 feet, on Second street, between Sycamore street and Grand avenue. Cost \$80,000.

Rochester, N. Y.—The American Laundry Machinery Manufacturing Company, of Chicago and Cincinnati, has completed plans for the erection of a plant on West avenue, Rochester. The concern has offices at No. 55 North street, Rochester. Fourteen buildings will be erected. The main building will be two stories, 160x225; the shipping and storage building, 44x250; stock room, 109x109; engine and boiler house, 82x115; foundry building, 100x300, besides the several smaller buildings which will be required. Officers of the company are: President, Adam Kreuter; vice president, D. M. Cooper; treasurer, Robert M. Burton; secretary, E. F. Underhill.

Schenectady, N. Y.—Architect Finch, of Schenectady, is working on plans for a factory for the Climax Specialty Company. Unless something unforeseen occurs, the building will be erected, and the machinery in full operation by November 1.

Davenport, Iowa—Plans are being prepared for an addition to the Black Hawk Clay Manufacturing company's plant which will give the company an output of 20,000 additional bricks a day. The addition will cost \$30,000.

Syracuse, N. Y.—The Standard Oil Company, 26 Broadway, Manhattan, will erect a two-story brick, mill construction, warehouse, 72x40 feet; boiler house and coal bin, one-story, 36x31 feet; wagon shed, 22x40 feet, at Syracuse, to cost \$30,000. Edward K. Fenno, Rosenbloom building, Syracuse, has received the general contract.

Newark, N. J.—Agreements have been signed by Coles A. Seely, treasurer of the Seeley Tube & Box Company, whose factory is now located on Fourth avenue, to acquire property on the south side of Central avenue, near Hudson street, upon which will eventually be built a six-story factory. Frederick A. Phelps, mechanical engineer and architect, with offices in the Union building, is preparing the plans. The

building will cost \$100,000, measure 160x225 feet, and will be started in September.

Cincinnati, O.—The Crane-Breed Company will erect a five-story steel and concrete factory on West Eighth street.

Trenton, N. J.—Work upon a new three-story brick building, 208x70, one-story, to cost \$20,000, has been started by the John A. Roebling Son's Company.

Marianna, Pa.—The Pittsburgh-Buffalo Company, Frick building, Pittsburgh, will take bids August 18 on a one-story brick and steel warehouse and machine shop which will measure 79x102 feet.

Blairsville, Pa.—H. W. Ferguson has received the general contract for the erection of a three-story brick and timber reinforced concrete pot house, for the Columbia Plate Glass Company. This building will measure 101x142 feet.

Clarksburg, W. Va.—The contract for the erection of a drift coal mine, to consist of a two-track tippie, timber construction, for the Lumber Port Coal Company, will soon be awarded.

Niles, O.—A brick, cement block and steel factory building will be erected for the Stanley Manufacturing Company, New Britain, Conn., which will establish a branch plant at this place. Two factory buildings will be of brick with steel frame 70x144 feet, one and one-half stories high, with a warehouse of cement blocks, one story high, 80x136 feet.

Phillippi, W. Va.—Engineer F. L. O'Neal has prepared plans for a power house, for the Humphreys Collieries Company, for which separate contracts will be awarded.

Akron, O.—A brick and steel reinforced concrete plant to consist of one building, six stories and basement, 150x400 feet and another building six stories and basement 150x175 feet, is to be built for B. F. Goodrich Company, from plans prepared by the Osborn Engineering Company, Cleveland.

East Pittsburgh, Pa.—A chemical and physical laboratory is to be added to the plant of the Westinghouse Electric & Manufacturing Company, in the near future. Bids are now being taken for the work.

Clarksburg, W. Va.—Bids are being taken on both steel and reinforced concrete construction for the new \$75,000 glass plant for the Hazel-Atlas Glass Company. Plant will be 75x158 feet, two stories high. Plans for this work were prepared for Architect Gladden Alexander.

SOUTH AMERICAN WORK.

The West of Minas Railway in Brazil has recently let a contract for rails, bridges, and material amounting to \$901,564. Practically all of the business will go to Belgium and Germany.

The electrification of the street railways of Rio de Janeiro as a development of the hydro-electric power system, recently put into service, is progressing rapidly. While many of the supplies are American, a considerable share of the business has gone to Europe as a result of close prices.

Coal Handling From Railway Cars to Storage.

FINE coal is not desirable for steaming fuel; lump coal is not economical for use in gas producers and for other purposes to which the lower grades are adapted. At any industrial plant where both grades of coal are wanted, the best way of buying is not to order the two separately, "prepared" by screening at the mine, but to purchase "run-of-mine" coal and separate it into the desired sizes as it is received.

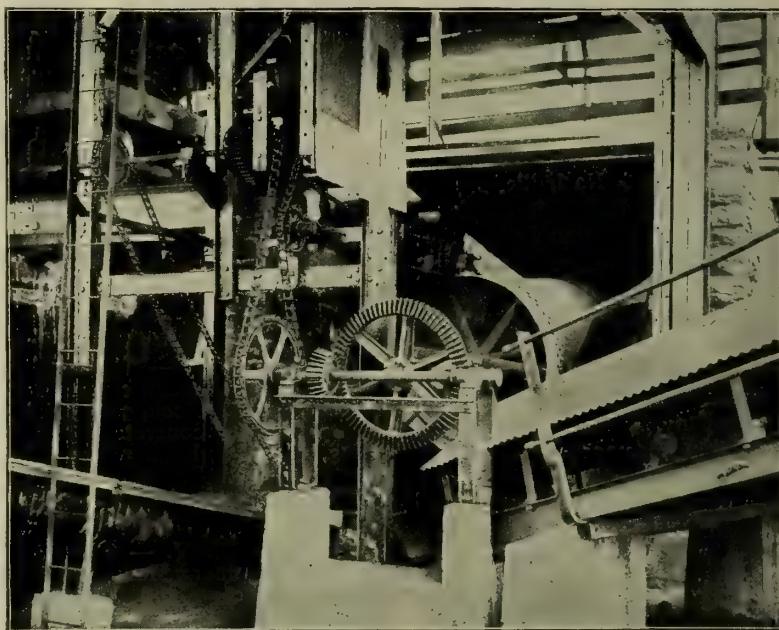
For doing just this at the plant of the American Iron & Steel Manufacturing Company, Lebanon, Pa., there has been installed a Dodge screening and conveying system which takes the run-of-mine coal and, separating the large from the small, delivers the two grades separately to storage where wanted.

Alongside the storage building for small coal is a railroad siding, elevated to pass above a track hopper into which the coal may be dropped directly from bottom-dump cars. From the hopper the coal descends into a rotary screen having perforations of such size as to effect separation into just the grades desired.

The drawing shows a plan of the arrangement. The small coal that passes through the screen is handled by a system of screw conveyors

and a bucket elevator, for distribution to storage in an oval pile on the floor of the big storage building. The large coal tails out of the rotary screen and onto a 24 inch belt conveyor, which carries

it up and over a pond and a railroad siding, a distance of about 175 feet, to storage at the power house. The large coal thus is handled by belt conveyor; the small coal by screw conveyors and a



Where the Coal Is Received and Screened: Detail view of the track hopper, rotary screen and belt conveyors, and the driving connections.



Belt Conveyor Carrying Lump Coal to Storage at the Boiler House: In passing from the track hopper to the power house, this conveyor crosses a condensing water pond, an industrial railway track and a railroad siding—avoiding several steam pipes and electric cables on the way.

bucket elevator.

The lower cut here given shows the long reach of this belt conveyor, first inclined upward to gain necessary elevation and then continued horizontally at proper clearance height above the car tracks. Several leads of piping, large and small, and a system of electric cables, had to be avoided in locating the conveyor.

The top view shows the track hopper and screen, with driving connections. Placed transversely beneath the screen is an eight foot length of 12 inch screw conveyor which discharges the small coal into a 21 foot section of the same size, placed in inclined position as seen at the left. This delivers into the boot of the elevator seen in the lower view. From the elevator head a long 12 inch screw conveyor overhead

makes distribution over the length of the building.

The capacity of the equipment is 25 tons per hour, so the contents of five 100,000-pound cars—"Jumbo hoppers"—can be unloaded, graded and stored per day of 10-hours.

The conveyor belt is 24 inches wide and is carried on Dodge standard rolls in self-oiling standards. The lower or return belt runs on straight rolls, spaced at double the interval of the upper rolls. Belt speed, 150 feet per minute. Length on centers of head and tail pulleys, about 177 feet.

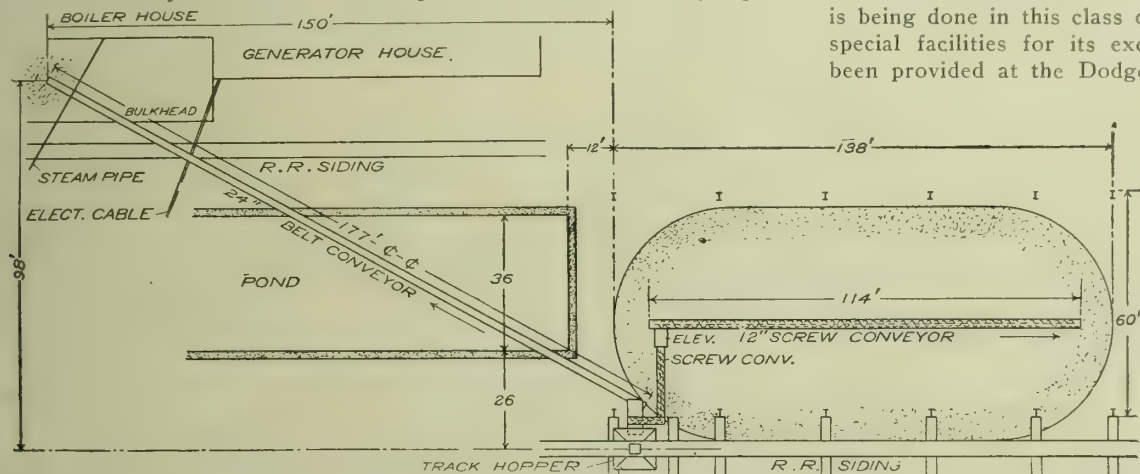
The elevator is of the continuous bucket type, with 12x7x12-inch buckets. Its speed is 120 feet per minute. The screw conveyors are all 12-inch, with steel castings. Their speeds are from 100 r. p. m. at the screen to 114 r. p. m.

for the long overhead conveyor.

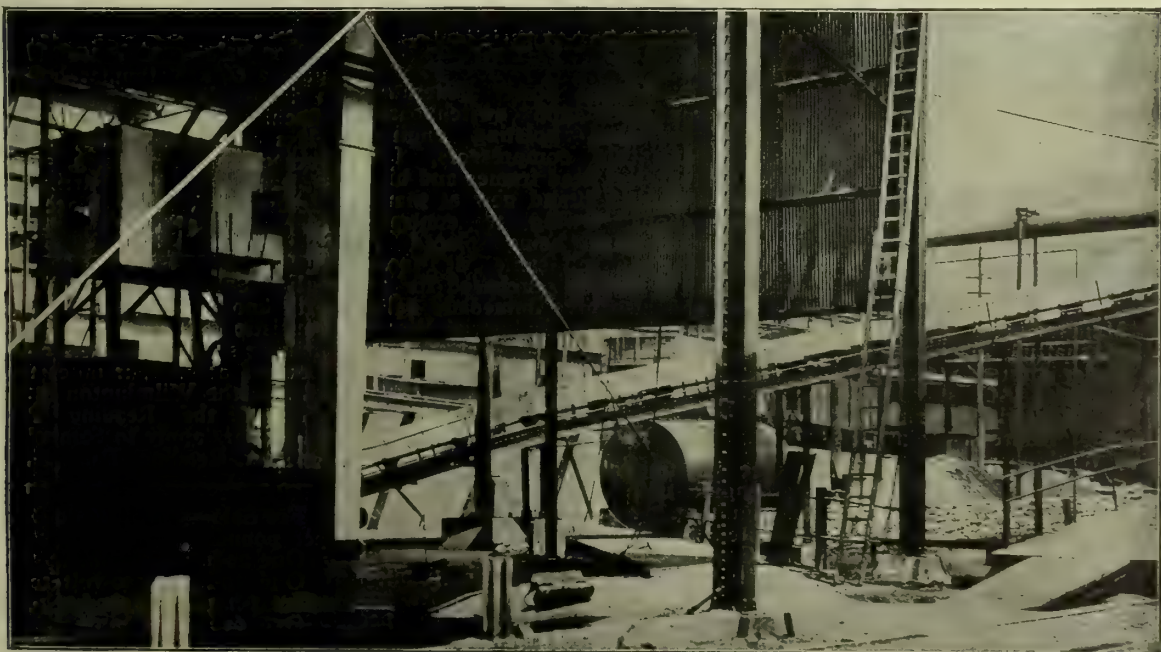
The screen, screw conveyors and elevator are all driven from an electric motor in the elevated housing seen in the storage house view. The belt conveyor, which of course must be driven at its head or discharge end, is operated by a countershaft from the boiler room.

This entire equipment was furnished by the Dodge Manufacturing Company, through the Philadelphia branch house. Erection was done by the purchaser. The outfit has been in perfectly successful operation since early in May and has proved itself well adapted to the conditions.

This is one installation of the many which the Dodge company has made recently in the line of high grade conveyor equipment for handling coal and kindred bulk materials. A large business is being done in this class of work, and special facilities for its execution have been provided at the Dodge factory.



Plan Showing the Location of Coal Storage and Conveyors.—From the screen beneath the track hopper the belt conveyor carries the large coal to the boiler house.—Screw conveyors and an elevator handle the fine coal.



General Arrangement of Coal Handling Equipment at the Coal Storage House: Driving motor is placed in the elevated housing and is geared to the conveyors, screen and elevator. The belt conveyors to the power house is driven at its discharge end.

Wanted, For Sale, Bargains, Etc., in Brief.

POSITIONS WANTED.

Drawings—Structural and mechanical designs and details. Moderate prices. Address Box 126 Industrial World.

Civil Engineer, 20 Years Experience, desires position as locating or resident engineer; also familiar with drainage work; At reference; have instruments. Address Box 43, Amboy, Ill.

Foundry Foremen and Others wanted to increase their earning capacity 25 to 50 per cent, by taking a course in the mixing of irons with the Milwaukee Correspondence Schools, Goldsmith Bldg., Milwaukee, Wis.

A Position as Manager or Superintendent; age 29; a graduate Massachusetts Institute of Technology; at present in charge of a boiler plant with an annual output of nearly 100,000,000 K. W. H.; reasons for desiring a change; 12 hours per day, 365 per year. Address Box 4, Darlington, Mo.

WANTED.

Situation—An experienced accountant, correspondent and general office man, accustomed to handling men and accounts, desires position where energy and attention to details will merit recognition. Address Postoffice Box 194, Northside, Pittsburgh.

Wanted—Attention, manufacturers. An old-established rolling mill, whose output is high grade bar iron, and black and galvanized sheets, and having ample ground in Pittsburgh district, would be interested in having located on their ground manufacturing adjuncts that use above materials. Parties engaged in manufacture of trade articles from above materials, who contemplate change of location, or engaging in new enterprises, can address office of the Industrial World, Pittsburgh, Pa., giving full particulars as to tonnage used; space desired, etc.

Wanted — A second-hand 15 or 16 h. p. stationary gas engine. Address Norwood Machine Company, Cincinnati, O.

Wanted — Manufacturers wanted to build cold rolled shafting machinery on royalty basis, under United States patent No. 895,364, dated August 4, 1908, described in the Industrial World December 28, 1908. Address John S. Griffin, Roslyn, Washington.

SEALED PROPOSALS.

Machines for Tabulating Agricultural Statistics. — The Director of the Census is considering various types of machines with a view to determining the one best adapted for tabulating the agricultural statistics of the Thirteenth Census. Any one possessing a machine adapted for this purpose is invited to present the

same for test in practical operation at the Bureau of the Census, Washington, D. C., on or before July 31, 1909. For further information address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

Sealed Proposals will be received at the office of the Director of the Census, Washington, D. C., until 2 o'clock p. m., August 9, 1909, and then publicly opened, for furnishing all the labor, materials, and work necessary for the construction in lots of 60, 75, 100, or 125 tabulating machines and delivering the same complete, free of all charges for transportation, at the Census Building, Washington, D. C. right is reserved to accept or reject all bids in whole or part, to strike out any item or items in the specifications, and to waive any defects. For specifications, blueprint drawings, blank proposals, and full information, address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

FACTORIES WANTED.

Factories Wanted — Grafton, W. Va., will give to manufacturers, a free site on railroad siding, with shipping facilities in all directions, five-cent gas, and an inexhaustible supply of soft water and coal. For information, address Secretary, Grafton Board of Trade.

MANUFACTURING SITES.

Manufacturing Sites — Free, on railroad and Ohio river and street car line; cheap gas; cash bonus given to good mills, factories and shops. Special facilities for sheet and tin mills. Address Paden City Land Company, 45 South Twentieth street, Pittsburgh, Pa.

FOR SALE.

For Sale—Several power generators with their engines and switchboards, lighting generators, hoisting engines, mine wagons, air compressors, feed water heater, steel head frames and bins. All this apparatus brand new at manufacturers' shops. Owing to contracts for this equipment being placed 18 months ago, can sell same at lower prices than it can be purchased for today and can also give immediate delivery. Address Box 200, Industrial World, Pittsburgh, Pa.

GAS ENGINE AND GENERATOR FOR SALE.

One Westinghouse 13"x14" 3-cylinder gas engine, with usual fittings and dynamo igniting spark coil, connected by patented flexible insulated coupling to one General Electric Company direct current generator, type M. P., 6 piles, 100 K. W., 270 R. P. M., 250 volts, 400 amperes, guaranteed to stand 50 per cent overload for two hours and 100 per cent momentarily.

All in first class condition. Used only as spare. We are replacing with 500

horsepower gas engine of our own make, and 400 K. W. generator. For price and photograph address Mesta Machine Company, Pittsburgh, Pa.

For Sale — One second-hand 8x9" Chuse engine, direct connected to 15 k. w. Triumph generator; good condition. Electric Machinery & Specialty Company, 204 Franklin avenue, St. Louis, Mo.

For Sale—Rock Drill—Ingersoll make; motor, 1 h. p., complete; shafting, pulleys, hangers, belting, lathes, 1 drill press, cheap; boilers, engines, pumps. William H. Flynn Machinery Company, 404 East Second street, Cincinnati, O.

For Sale — Engines, lathes, shapers, drills, planers, milling machines and other machine tools. Examine our 18"x8' new latest improved lathe, for automobile shops, \$325. Also, latest improved B. G. crank shaper, \$250. Western Machinery Company, 828 West Sixth street, Cincinnati, O.

For Sale—One-fifth interest in an up-to-date manufacturing plant, building a line of special and patented machinery, and having a very extensive jobbing trade. Purchaser can secure a salaried position as engineer, chief draftsman, or salesman. Price of one-fifth interest \$10,000. Address Box 154, care Industrial World, Pittsburgh, Pa.

Machinery Bought, Sold and Repaired —Engines and boilers, all styles and sizes, both new and second-hand; machinery of every description for all purposes; also pulverizer and crushers. Write to me for anything you want. Gruendler Machine Company, 928 Main street, St. Louis, Mo.

For Sale—One 18x24" slide valve engine 2 66"x18" tubular boilers, 1 heater, 1 deep-well pump and 5 wood working machines; will overhaul and put in first-class condition, cheap; also, several direct current motors, 3, 5, 10 and 15 h. p., 220 volts. The Farrin-Korn Lumber Company, Winton Place Station, Cincinnati, O.

For Sale — Rolling Mill—The property known as the Seyfert Rolling Mill, consisting of Puddle and Plate Mills for making sheared skelp is offered for sale. Located about four miles from Reading, Pa., on the Wilmington & Columbia Division of the Reading Railroad. For particulars apply to Samuel R. Seyfert & Brother, Reading, Pa.

For Sale—51 feet 16 double belting, 400 per pound.

One 20-h. p. 500-volt motor.
One 10-h. p. 500-volt motor.
One 3-h. p. 220-volt, back-gear motor.
One 6x6 air compressor.
One 4x6 air compressor.
One 100-h. p. Corliss engine. American Electric Company, 1106 Cass avenue, St. Louis, Mo.

(Continued From Page 975.)

accurate treatment with varying water supplies, as well as take care of totally different supplies, as occasion may demand, in different seasons of the year, and, with it, any desired treatment can be used, as required by the nature of the water. With this apparatus it is possible to shift from using a creek-water to mine-water, and make the treatment that may be necessary by means of the simple color-tests employed. No matter what supply is available, a water free from scale-forming and corroding substances can be fed into the boilers, thus making it possible to operate the boilers year in and year out with a minimum expense for maintenance and a decided saving in fuel. It seems rational that a coal mine operator should so equip himself for a water supply which would enable him to operate his boilers without such forced shut-downs as occur when he is at the mercy of weather conditions.

TELEPHONES FOR CHINA.

One of the most significant foreign undertakings of the year was the contract announced by the Western Electric Company, of New York, during the past week, for the installation of a complete telephone system for the city of Peking, at an estimated cost of 150,000. The contract was awarded only after the most bitter competition. Two years ago the Chinese government appointed a commission to study the telephone systems of the world. During the intervening months nearly every system known to civilization has been tried out in Peking, and numbers of government commissioners have visited America and Europe.

At present there are only 2,000 antiquated telephones in use in the whole Chinese empire, and most of them are in the foreign settlements. The contract for Peking is only a preliminary one. The government will operate the telephones for the benefit of all residents of the city. Later contracts will be awarded for Canton, Hankow and Tientsin. In 1930 it is estimated that there will be a telephone for every five persons in this country. If China has one telephone for every 100 persons at that time it will have cost her \$1,000,000,000.

The company will begin work at once on the equipment, which will include a power plant and reserve plant, 350,000 feet of lead-covered cable for aerial and underground construction, and two common battery switchboards. Each board will have a capacity of 10,000 lines, but only 2,500 lines will be set up at first. The company will use a large number of Chinese in constructing the plant.

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DEVELOPMENT OF THE STEEL OIL DERRICK.

By R. B. Woodworth.*

In the shallow Eastern oil fields the derrick in ordinary use is 55 feet high and is equipped with crown pulley, sand-line pulley, bull wheel, walking beam, band wheel and sand reel only. The drilling of a well in this field produces a working load of not to exceed 40,000 pounds on the bull-wheel rope and about 10,000 pounds on the end of the walking beam. After the wells are drilled and for the purpose of cleaning, a much lighter derrick can be employed with a load on the bull-wheel rope not to exceed 20,000 pounds, and on the walking beam 4,000 pounds.

In Southwestern Pennsylvania and in West Virginia the standard derrick is 80 feet high, proportioned for a drilling load not to exceed 60,000 pounds on the bull rope and 17,000 pounds on the walking beam.

In California, however, there has been developed an especial type of derrick known as the California type. These derricks are made 72 feet high and the bull wheel is supplemented by a calf wheel which carries the reamers and other tools used in connection therewith to enlarge the holes in advance of the casing, to maintain the alignment and to save time, which last is a very important element in well drilling. Ordinarily the same size timbers are employed in their construction as are used on the 80-foot derrick in the East. In some cases it is necessary to strengthen the legs of the derricks and bracing, producing what is known as a double derrick. A load of 80,000 pounds on the bull rope is not uncommon in cases of this sort, and instances have been known of the use of a string of casing weighing up to 89,000 pounds. For these deep wells a drilling load of 80,000 pounds on the bull rope and 20,000 pounds on the walking beam is not unreasonable.

The complete drilling machine manufactured by the Carnegie Steel Company represents the culmination of a development and incorporates in its construction the experience of successful oil-well operators and manufacturers of oil-well supplies combined with the skill of the engineer trained in the theories and practice of structural design. As already intimated, past endeavors in the substitution of steel for wood in the construction of oil and gas well derricks have been without much success owing to the

* Engineer with the Carnegie Steel Company, Pittsburgh, Pa. Part of an article presented before the structural section of the Engineers' Society of Western Pennsylvania, and published in the June, 1909, proceedings.

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lack of intelligent co-operation on the part of the operators and the structural designer.

The first metal oil derricks were probably constructed of second-hand steel on iron tubing used in drilling operations with forged connections and diagonal braces made of rods and turn buckles or wire cables. The most recent development of this class of construction is a pipe derrick constructed by the South Penn Oil Company and used over old wells. The legs and girts of this derrick are made of 2½-inch and 3-inch pipe; the diagonal braces of 2-inch and 1-inch pipe; and the ladder of pipe also. The diagonals are fastened together at their intersections by U-bolts, and at their ends they and the girts are forged out flat and fastened to the legs by bolts passing through steel castings which are clamped tightly in position over the abutting ends of the legs by bolts passing through flanges on the outside of the derrick. At the bottom special flange castings are provided into which the legs of the derrick are screwed and which in turn are bolted to the sills. The bull wheel turns between white-oak posts and the upward strain due to drilling is transmitted as tension into the sills. Special castings are also provided at the top to receive the crown block and the crown pulley. This type of construction seems to be very well adapted for use in cleaning purposes over old wells. It requires six men about three days for its erection complete. The material is obtained second hand in the oil fields and is, therefore, economical. The forging and special castings would seem to a structural man to be an item of considerable expense. Its chief advantage is that the materials can ordinarily be furnished and the work done by the operators in their own shops. The weight of the derrick proper is about 7,000 pounds.

In 1903 the Carnegie Steel Company built for the South Pennsylvania Oil Company and the Carnegie Natural Gas Company 12 oil derricks which were used in the Pennsylvania and West Virginia oil fields. These derricks were 80 feet high with a 20-foot base and were constructed along the lines of the structural-steel tower. The derrick proper weighed 24,000 pounds and provision was made at the top for the crown pulley and at the bottom for wooden bull-wheel supports. No endeavor was made to design a complete drilling machine. They proved to be fairly satisfactory, were stiff and steady under strain and have been removed from their original location and re-erected in the drilling of more than one well.

In 1904 the Carnegie Steel Company took counsel with the Oil Well Supply Company for the construction of a standard steel oil derrick 72 feet high with a



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20-foot base, California type, and the intention in the design which was produced was to construct proper supports for all the machinery, bull wheel, etc. This derrick likewise was constructed along the lines of a structural-steel tower with high panels, requiring the use of gin poles and scaffolding for their erection.

The first derricks constructed under this design were shipped to South America for use in the oil fields of Argentina and Peru after the lower panel of them had been erected at Upper Union mills for the proper adjustment of all working parts. The derricks were then shipped to New York via rail and thence via steamer to South America and were hauled inland 300 or 400 miles. The first derrick from which reports were received was erected over a well that had been drilled 1,000 feet deep. The drilling was continued 500 feet farther when it was decided to move the derrick to a new location. To do this the sills of the machinery supports were disconnected from the derrick foundation and the derrick moved bodily on pipe rollers to a new location two or three miles away. The band-wheel sills with the jack posts and band wheel in place were then hauled bodily by ox team. After arrival at the new location the parts of the derrick were then connected up again and drilling proceeded. This was a severe test, but under such unusual conditions the derrick behaved itself admirably without signs of weakness or injury.

In the consideration of a proper design for a standard derrick the question has been raised as to whether or not it is possible to construct what might be called a collapsible rig, easy to erect and easy to remove, and in this direction a fertile idea has been brought forward by Patrick Yorke, of the Yorke Derrick Company. Mr. Yorke has introduced numerous improvements in drilling mechanism and practices, one of which is the discovery that in drilling deep wells it is not necessary to revolve the tools. Anything, therefore, which he presents is worthy of careful consideration. Mr. Yorke's derrick has been used in drilling a well 2,800 feet deep and has given entire satisfaction. The idea is new to structural design and use only can determine whether or not it is safe to depart from recognized details of construction.

The California-type oil derrick shipped to South America was equipped with a steel walking beam equivalent in strength to the best 12x26 inch white oak, but had the disadvantage of requiring the use of scaffolding for its erection. The next step in the development of the steel oil derrick was to reduce the height of the panels to permit ease of

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FRICK BUILDING ANNEX

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erection and to construct the bull wheel, band wheel and other parts heretofore made of wood, of steel. The latest improved form of steel drilling rig is now a complete machine designed along well approved lines and fitted for repeated and continuous service as a machine and possessing within itself, so far as consistent with stiffness and strength, all the elements of simplicity and portability. The improvements incorporated in this machine as the results of observation and experience may be summarized as follows:

1—The reduction in the height of the panels to permit erection without any special equipment in the way of scaffolding and to facilitate removal of the derrick from place to place, with provision for the proper ladder to enable workmen to ascend and descend as the drilling operations may require.

2—The square construction of the bottom panel of the derrick with the elimination of buttress and other extraneous devices for the prevention of overturning under wind stresses. The extra material which these buttresses would require has been utilized for the bull and calf-wheel posts, which are preferably vertical. In this type of construction the upward reactions of the drilling loads on bull and calf wheels have been modified in direction and are transmitted not into the girt by bending, but directly into the foundations by a diagonal system of bracing which relieves the derrick itself of any upward stresses which might cause its collapse.

3—The foundation of the derrick proper is constructed of standard beams and channels so arranged as to distribute the load of the structure to concrete or masonry piers at the corner points of the derrick. The joists have been arranged with such a reference to the well hole as to be in proper position to support the string of tools, casings, etc. The sills for the machinery supports are also beams and channels so arranged as to be directly under the points of maximum loading. The knuckle posts have been arranged so as to bring the center line of the sand reel directly on the working line of the derrick, and in general the arrangement of the bracing, the foundation and the other details is such that indeterminate stresses have been entirely eliminated.

4—The bull-wheel shaft is made of pipe with a special type of gudgeon threaded into its end and held in place by tap bolts. It carries a tug wheel and a brake wheel made of steel-beam spokes bolted into an angle rim secured to the bull-wheel shaft and carrying at their ends a bent channel rim filled with wood fillers properly grooved for the reception of the tug rope and correctly leveled for the steel band brake. These wood fillers, ordinarily known as "cants," are

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connected to the channel rims by bolts. They can be very easily taken off and replaced when worn. The spool is made of angles framed into each other and bolted to an angle rim secured in turn to the bull-wheel shaft. The wooden handles for starting the bull wheel off center are replaced by gas pipe held in position by bolts passing through the flanges of the channel rim.

5—The walking beam is built up in a tapered shape exactly similar to the wooden walking beam by the use of plates and angles. It is slotted at one end to receive the temper screw and at the other end carries a standard stirrup for the attachment of the pitman. The beam itself is supported on a column composed of two channels latticed and braced by an A-shaped structure connected with the derrick itself with provisions for the direct transmission of the load into the foundation sills. The thrusts at the bottom of the A-frame are taken care of by the channels to which they connect in the foundation, acting as ties and preventing any lateral displacement. The top of the frame is braced by angle braces to the derrick proper, forming, in connection with the girt, a triangular truss.

6—The jack posts are also constructed of short latticed channel columns rigidly framed between the channels of the sills and braced against the derrick and the sand-reel sills by angle braces. It will be noted that the inner jack post is a new one to carry a part of the load of the beam, producing great stiffness and rigidity.

7—The inner knuckle post is framed directly to the end of the sand-reel sill and stiffened by an angle and plate diaphragm riveted to the top of the main machinery-support sills. The bearing for the sand reel is made adjustable to permit a movement of the sand reel an inch or two in a horizontal line to secure proper bearing of the friction pulley against the band wheel. The outer knuckle post is in two parts, the bottom of which is framed rigidly to the sand-reel sill; the upper portion consists of a long channel with tapered end carrying the other bearing of the sand reel and pivoted at its connection with the lower portion by a two-inch cotter pin. This channel forms the swing lever for the operation of the sand reel.

8—The band wheel has been constructed in a similar manner to the bull wheel by the use of steel plate flanges keyed on the standard band wheel shaft and carrying spokes to which is connected a channel rim similar to that used in the construction of the bull wheel. This channel rim is chambered about three-eighths of an inch at its center to provide proper bearing against the friction pulley on the sand-reel shaft and for the

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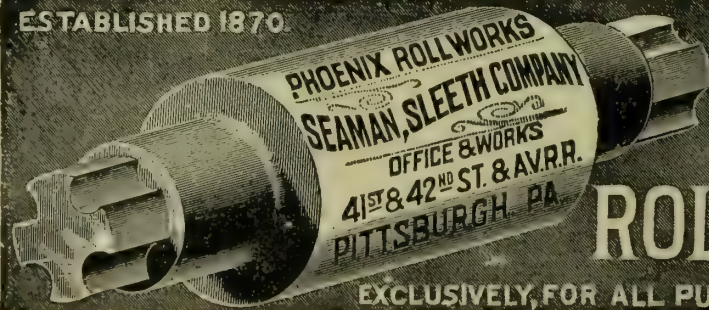
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proper application of the belt. This rim has been furnished in two ways: in the one case with the back of the channel turned out where it became necessary to use an old canvas belt to obtain proper friction against the iron pulley on the sand-reel shaft; in the other case the flanges of the channel have been turned out and filled with wooden cants exactly similar to those employed on the brake side of the bull wheel. The tug portion of the band wheel is made of a smaller channel bent to a circle and connected to the spokes of the band wheel by an angle and plate gussets. The flanges have been turned out and the wheel lined with wood to receive the tug.

9.—The sand reel used on these derricks is the regular California double-drum iron reel and in general an endeavor has been made in all instances to use standard rig irons such as are kept by dealers in oil-well supplies. The crown pulleys, bull-wheel bearings, temper-screw and pitman bearings, saddle blocks, jack post bearings and sand-reel bearings are of the regular standard type of construction; so also are the band-wheel shaft, wrist pin and pitman.

These rigs have been employed in drilling wells 3,000 feet deep. They have been taken down and moved from place to place and have given excellent service. They possess a rigidity, stiffness and reserve strength which imparts confidence to the driller. It has been intimated that a derrick ought to possess a certain amount of elasticity and springiness. I do not believe the point well taken. I look upon a drilling rig as a machine and like a machine it ought to possess stiffness under all working conditions. In actual operations when a derrick trembles, I tremble, also.

In connection with the derrick, machinery supports and drilling mechanism, proper provision has also been made in the 1909 standard drilling machine for a light angle frame to take corrugated sheet covering to protect the workmen from the wind and the weather. This frame is punched for the bolting of wooden nailing strips to which the corrugated sheets are attached by roofing nails so as to be easily removable when drilling operations are completed. The only wood employed in the construction of this drilling machine, apart from that already indicated, is the two-inch planking of the derrick floor.

The weight of a standard 80-foot drilling machine, including derrick proper, base, ladder, walking beam, machinery supports, structural material for house, corrugated iron, bull and band wheels, crown pulleys, sand reel, etc., etc., is 57,000 pounds. It is confidently believed that this drilling machine, combining engineering skill with practical experience, is absolutely reliable and adequate to the service it has to perform



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NEW MARKETS ABROAD.

Hydraulic Machinery in Mexico.

As to the best manner of introducing hydraulic machinery into the Mexican market, Consul Thomas W. Voetter, of Saltillo, writes the Department of Commerce and Labor:

The best method of reaching prospective purchasers of steam, electric, and hydraulic machinery and apparatus is by the maintenance of a representative in Mexico who will travel from place to place. By careful reading of the press and from news which an able man would receive from acquaintances a representative would learn of enough new enterprises in Mexico to keep him busy looking after them. If the home office should consider the expense of maintaining such a representative too great, it might join forces with one or two other firms which have allied lines, but not competing ones, so that the expenses of the joint representative could be divided. One good contract landed will pay the expenses of a good man for a long time, and one installation satisfactorily completed will be a good advertisement for another.

Very many foreign firms maintain agencies in the City of Mexico, and the advertisements of these representatives of German, British, French, Belgian, and Swiss firms appear constantly in the Mexican newspapers.

Saws for Germany.

Consul-General Robert P. Skinner, of Hamburg, reports as follows on saws in Germany:

Although manufacturers of saws in the United States are paying little attention to this market, the superiority of the American saw has created a considerable German demand for it, and one which special effort could greatly increase. The duty on blades for circular, band, and fret saws is \$4.76 per 220 pounds, and on other saw blades and handsaws \$3.57 per 220 pounds, both rates being the same under the maximum and minimum schedules, and so moderate as to make it entirely possible to dispose of American goods in competition with domestic and other foreign manufactures.

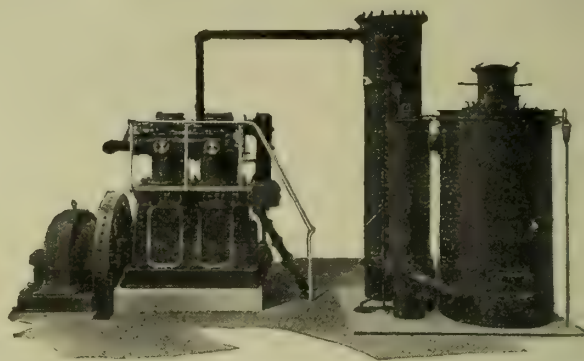
It is generally recognized in the trade that the steel used in American saws is particularly fine in quality and that our manufacturers have set a standard to which the manufacturers of all other countries are trying to attain. One large German concern, the largest, in fact, now claims to be able to deliver saws equal in quality to those imported from America. Generally speaking, however, manufacturers are devoting themselves to the production of the cheaper grades,

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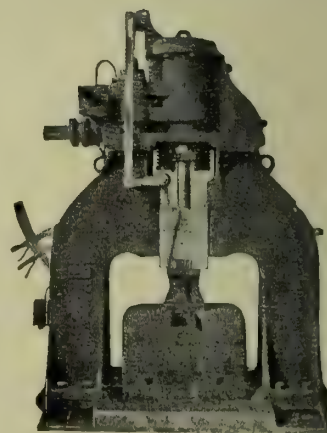
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in the making of which they have the advantage of very low-priced labor.

An active importer of American goods in Hamburg states that the sale of American saws could be doubled readily if American manufacturers, instead of intrusting their representation to general exporting and importing firms who handle 10,000 articles, would give it to an agent making a specialty of a few hardware lines. In spite of their high price, American circular saws are bought in fair quantities, their excellent qualities overweighing all other considerations. It is suggested that the distribution of free samples in the German sawmills for trial purposes would probably result in a large increase in the business, which is now shared by two celebrated American firms only. American hack-saw blades, although worth about one-third more than German blades, are readily sold owing to their special temper, and this business is equally susceptible of large increase.

Machinery in India.

Consul E. C. Wakefield, of Rangoon, replying to inquiries, reports as follows in regard to the use of machinery:

This province is very rich in natural resources and should prove a good market for standard American machinery of various kinds, including machinery for sawmilling, mining, smelting, oil drilling and refining, rice milling, agriculture and for all other industries which are sure to be established. The future of Burma is very promising and the next few years should witness a great change in methods and results.

Cheap labor has been the principal handicap in introducing modern machinery. Wages are, however, slowly but steadily advancing.

For Metal Roofing.

In answer to an inquiry by a firm in the United States in regard to the introduction and sale in South Africa of prepared roofing materials, Consul Edward Gunsalus writes from Johannesburg:

The roofs on 99 out of every 100 buildings for both residential and other purposes in the city of Johannesburg and the Transvaal generally are of corrugated iron, and this applies to the whole of British South Africa. The local retail prices of corrugated iron roofing, which comes in sheets two feet wide, range from 10 to 11 cents per running foot for 24 and 26 inch gauge.

Of this corrugated iron there was imported into British South Africa last year shipments to the value of \$1,162,419, the most of which was used for roofing purposes and all of which came from Great Britain. The import duty on corrugated iron is 3 per cent ad valorem, which is rebated on shipments from the mother country.



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ALLEGHENY COUNTY LIGHT CO.
435 Sixth Ave., Pittsburgh, Pa.

Owing to universal use of this material for roofing, and because of the general satisfaction it seems to give, I think it would be exceedingly difficult to successfully introduce any other kind, though a proper presentation of the merits of other roofing materials might lead to their adoption and sale.

Plumbing Supplies for Brazil.

In answer to inquiries Consul-General George E. Anderson reports as follows concerning the opportunities in Rio de Janeiro for the sale of sanitary and plumbing goods:

There is a growing demand here for the latest sanitary fittings and plumbing supplies, and all things, which go to make up a modern equipment in bathrooms, both public and private. Nearly all of Rio de Janeiro city proper is now piped for the most modern sewerage service, and full provision is made therein for modern plumbing. On the whole, fittings for water connections run lighter in weight than in the United States, owing to the fact that the water pressure generally is low, and also to the fact that frost is never to be considered.

From the introduction of the first modern sewer system by an English corporation until comparatively recently English merchants were generally in the lead in such matters, and most of the imports of such goods are English, while to some extent fashion favors English ware. The United States, Germany and Belgium, in the order named, however, have a fair share of the trade. American fittings and appliances seem to be popular, and apparently there is a good opportunity to extend the trade. There is an increasing use of enameled iron bowls, baths, and unclosed washstands.

FOR B. & O. CUTOFF.

The Baltimore & Ohio officials have had surveyed and are contemplating building a line from Uniontown, Pa., to Cumberland, Md., a new stretch of tract of about 54 miles in length to effect a short cut from the West Virginia territory to the east, and to get the West Virginia coal tidewater. This cut-off will effect a saving of from 40 to 50 miles.

Another cut-off has been surveyed from Wildwood, Pa., on the Pittsburgh & Western division, to avoid the roundabout route to Calery Junction, which will effect a shortening of one line between Pittsburgh and Chicago of about 25 miles.

The Wildwood cutoff will open up a section that up to this time has had no direct communication with important points and places it on the main line of a trunk system.

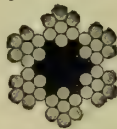
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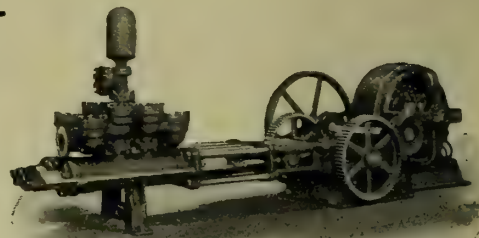
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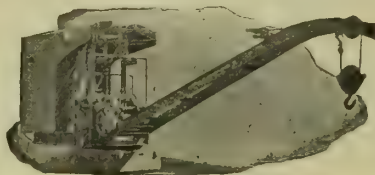


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First.—Upon its location, the amount and uniformity of flow, head, conditions affecting the cost of construction and transmission, use of exhaust steam and need of water for other purposes than power.

Second.—Upon what the power is to be used for, whether for electric lighting and railway work, through most of the hours in the day with a variable load for 24 hours a day, or for running a textile mill or similar plant with a fairly steady load for about 10 hours a day.

Third.—Upon the market which can be served, whether it is secure and steady or must be built up and is somewhat unreliable.

The value of a privilege should be determined by comparison with the cost of producing power in such quantities and with such regularity as is required for the particular purpose for which it is to be used in a fairly economical manner at any place or places equally convenient for the transaction of the business under consideration. Sometimes the location is fixed, but oftentimes there can be a choice of locations.

In estimating the value of an undeveloped privilege, the steps followed are as follows:

1—Determine the flow, including the effect of storage and pondage.

2—Determine the net head.

3—Determine the horsepower which can be economically developed and used each month in an average year.

4—Determine the minimum flow and power, and from this the size of supplementary steam plant required if the power is to be developed above the minimum flow.

5—Determine the shortage of water power during such months as there is a deficiency.

6—Determine the probable cost of development of the water power.

7—Estimate the probable cost of the supplementary plant, using steam, gas, oil, or anything which is best for the location under consideration.

8—Estimate the yearly cost of running the water power and supplementary plants, including the fixed charges on both, to produce a combined power suitable for the purpose for which the power is to be used.

9—Estimate the cost of a steam or other kind of plant, necessary to produce the power required.

* Mill engineer and architect, Boston; member of National Conservation Commission, with special reference to water powers.

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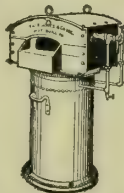
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10—Estimate the yearly cost of running this plant, including fixed charges, to produce the power required.

11—Subtract the cost of producing the power by water power and the supplementary plant from the cost of producing it by steam power, or some other method, alone. The difference, if positive, gives the apparent yearly saving by the use of water necessary for location or any other thing affecting the value.

12—Capitalize this difference at a rate which seems proper, and the result is the value of the privilege.

COKE PRODUCTION IN ILLINOIS.

Coke making in Illinois has gained prominence by the construction in 1906 of 160 Sement-Solvay ovens at South Chicago and the construction of 280 Koppers regenerative by-product ovens by the Illinois Steel Company at Joliet. Of the latter, which were begun in 1907, one-half were put into operation in 1908. Coal for these by-product ovens is drawn from mines in Fayette county, W. Va. One other establishment making coke in Illinois in 1908 was the Gallatin Coal & Coke Company, at Equality, which cokes Illinois coal in Belgian ovens. The production of coke in Illinois in 1908, as reported to the United States Geological Survey, shows a

smaller percentage of decrease than in any other State of importance in the coke making industry, amounting to 362,182 short tons, valued at \$1,538,952, against 372,697 short tons, valued at \$1,737,464, in 1907, a decrease of 2.82 per cent in quantity and 11.43 per cent in value. The average price per ton declined from \$4.66 to \$4.25.

WAGE INCREASES IN GERMAN STEEL INDUSTRY.

Consul George Nicholas Ifft, of Nuremberg, reports as follows to the Department of Commerce and Labor concerning the prevailing wages in the South German iron and steel industry in 1908:

The South German Iron and Steel

Association (Berufsgenossenschaft), which comprises 12,493 concerns, employing 210,689 workmen, reports the average yearly earnings of a fully employed journeyman working during the year 1908 at \$283.94, as compared with \$280.13 in 1907, an increase of \$3.81 for the year. Not counting Sundays and deducting 20 days for holidays, it will thus be seen that the average daily wages of the journeymen workmen in the South German iron and steel industries was less than 97 cents.

While even this was a slight increase for the workman lucky enough to have steady employment, there was, however, during the year less employment to be had than in 1907. The number of hours of actual labor performed in these concerns in 1907 was 592,950,000 and for

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1901	164,000	1.29%
1902	319,000	1.85%
1903	463,000	2.08%
1904	473,000	1.78%
1905	1,735,000	4.92%
1906	2,076,000	4.55%
1907	2,129,000	4.36%
1908	4,535,000	8.89%
1909	*6,000,000	

*Estimated.

Additional capacity now under construction will give us an output of 8,000,000 barrels for 1910.

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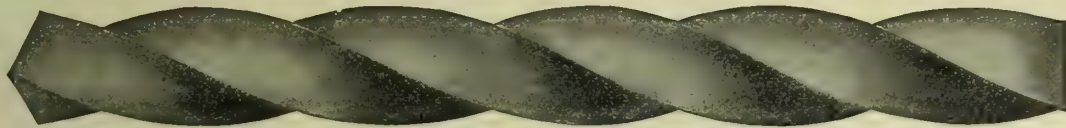
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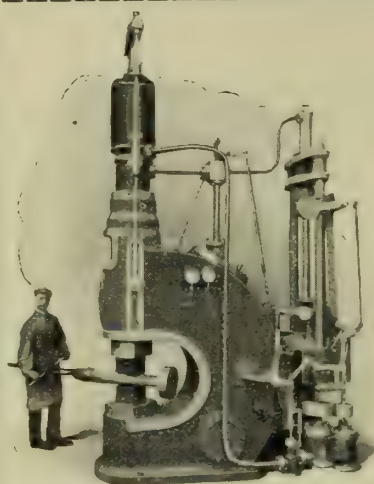
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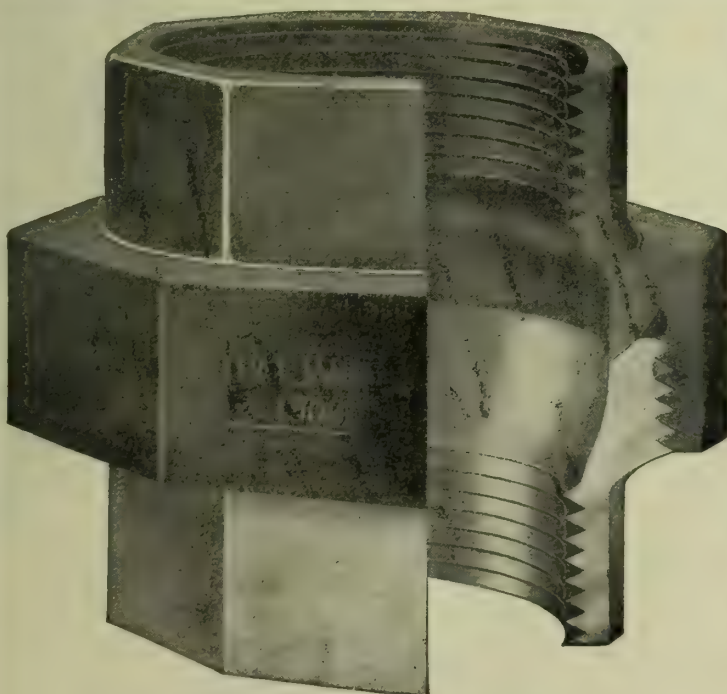
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Hall Steam Pump Co. Pittsburgh.
Moore, Lee C. & Co. Pittsburgh.
Wickes Brothers Pittsburgh.

AIR HOISTS.
Baird Machinery Co. Pittsburgh.

AIR PRESSURE TANKS.
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AUTOMOBILE HOIST.
Otis Elevator Co. Pittsburgh.

BAGASSE FEEDERS.
Link-Belt Company Philadelphia.

BAR STEEL.
Jones & Laughlin Steel Co. Pittsburgh.
W. G. McKenney & Co. Pittsburgh.

BELTING.
Baird Machinery Co. Pittsburgh.
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.
Wickes Brothers Pittsburgh.

BELT DRESSING.
Jos. Dixon Crucible Co. Jersey City.

BENDING MACHINES.
Cleveland Crane & Eng. Co., Wickliffe, O.
BENDING MACHINES-HYDRAULIC
Chambersburg Engineering Com-
pany Chambersburg, Pa.

BENDING ROLLS.
Bertsch & Co. Cambridge City, Ind.
Cincinnati Punch & Shear Com-
pany Cincinnati, O.
Cleveland Crane & Eng. Co., Wickliffe, O.
Wickes Brothers Pittsburgh.

BEAMS.
Jones & Laughlin Steel Co. Pittsburgh.
W. N. Kratzer & Co. Pittsburgh.
W. G. McKenney & Co. Pittsburgh.
Wm. B. Scaife & Sons Co. Pittsburgh.
Riter-Conley Mfg. Co. Pittsburgh.

BLACK SHEETS.
American Sheet & Tin Plate Com-
pany Pittsburgh.

BLOWING ENGINES.
Mackintosh, Hemphill & Co. Pittsburgh.

Mesta Machine Company Pittsburgh.
Southwark Foundry & Machine Co.
..... Philadelphia.

BOILER FEED PUMPS.
Moore, Lee C. & Co. Pittsburgh.
Wickes Brothers Pittsburgh.

BOILER FITTINGS.
National Tube Co. Pittsburgh.

BLAST FURNACES.
Riter-Conley Mfg. Co. Pittsburgh.

BOILERS.
Wm. B. Scaife & Sons Co. Pittsburgh.
H. J. Koontz Pittsburgh.
Meehan Boiler & Con. Co. Lowellville, O.
Petroleum Iron Works Co. Sharon, Pa.
Struthers-Wells Co. Warren, Pa.
Wickes Brothers Pittsburgh.

BOILER TUBES.
National Tube Co. Pittsburgh, Pa.

BORING MACHINES.
Baird Machinery Co. Pittsburgh.

BRASS & BRONZE CASTINGS.
McKenna Bros. Brass Co. Pittsburgh.
Mesta Machine Co. Pittsburgh.
United Eng. & Fdry Co. Pittsburgh, Pa.

BRIDGE BUILDERS.
Riter-Conley Mfg. Co. Pittsburgh.

BRIDGE & STRUCTURAL WORK.
Jones & Laughlin Steel Co. Pittsburgh.
W. N. Kratzer & Co. Pittsburgh.
Meehan Boiler & Con. Co. Lowellville, O.
Riter-Conley Mfg. Co. Pittsburgh.
Wm. B. Scaife & Sons Co. Pittsburgh.
BELLS and GONGS (Seamless Steel.)
National Tube Co. Pittsburgh, Pa.

BUCKETS.
Browning Eng. Co. Cleveland, O.
Industrial Works Bay City, Mich.
Wickes Brothers Pittsburgh.

BARREL-HANDLING MACHINERY.
Link-Belt Company Philadelphia.

BELT CONVEYORS.
Link-Belt Company Philadelphia.

BUCKETS (Self-Filling).
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.

BUCKETS (Coal).
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.

BUCKETS (Ore).
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.

BRAKES (Electric).
Electric Con. & Mfg. Co. Cleveland, O.

CAR FORGINGS.
Connellsville Mfg. & Mine Supply C.
..... Connellsville, Pa.
Phillips Mine & Mill Supply Co. Pittsburgh.

CASTINGS.
Chambersburg Engineering Co. Chambersburg, Pa.
Connellsville Mfg. & Mine Supply Co.
..... Connellsville, Pa.
Lewis Fdry & Machine Co. Pittsburgh.
Link-Belt Company Philadelphia.
McLanahan Stone Machine Co. Hollidaysburg, Pa.
Mackintosh, Hemphill & Co. Pittsburgh.
Mesta Machine Co. Pittsburgh.
Scaife Fdy. & Machine Co. Pittsburgh.
Taylor-Wilson Mfg. Co. Pittsburgh.
United Eng. & Fdry Co. Pittsburgh, Pa.
Wheeling Mold & Foundry Co. Wheeling, W. Va.

CEMENT.
Universal Portland Cement Co. Pittsburgh.

CENTRAL CONDENSERS.
Mesta Machine Co. Pittsburgh.
Southwark Foundry & Machine Co.
..... Philadelphia

CEMENT MACHINERY.
American Clay Working Mach. Co.
..... Bucyrus, O.

CHAIN BELTING.
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.
McLanahan-Stone Machine Co. Hollidaysburg, Pa.

CHEMISTS.
Gulick-Henderson & Co. Pittsburgh.

CRANE UNLOADERS.
Link-Belt Company Philadelphia.

CARS (Industrial).
Link-Belt Company Philadelphia.

CAR HAULS.
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.

CARRIERS.
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.

CHROME BRICK.
Gulick-Henderson & Co. Pittsburgh.
Stowe-Fuller Co. Cleveland, O.

COAL.
Jamison Coal & Coke Co. Pittsburgh.
Pittsburgh-Buffalo Co. Pittsburgh.
Washington Coal & Coke Co. Pittsburgh.

CHISEL BLANKS.
Cleveland Crane & Eng. Co., Wickliffe, O.

CIRCUIT BREAKERS.
Electric Controller & Mfg. Co. Cleveland, O.

COAL AND ASH HANDLING MACHINERY.
Browning Eng. Co. Cleveland, O.
Industrial Works Bay City, Mich.
Jeffrey Manufacturing Co. Columbus, O.

CONTROLLERS (Electric).
Electric Con. & Mfg. Co. Cleveland, O.
Otis Elevator Co. Pittsburgh.

CONVEYORS AND ELEVATORS.
Scaife Fdry & Mach. Co. Pittsburgh.

CONVEYING MACHINERY.
Browning Eng. Co. Cleveland, O.
Jeffrey Manufacturing Co. Columbus, O.

CORRUGATED IRON.
McCullough Iron Co. Wilmington, Del.
Wm. B. Scaife & Sons Co. Pittsburgh.

CORRUGATED SHEETS.
American Sheet & Tin Plate Com-
pany Pittsburgh.

CHROME ORE.
Stowe-Fuller Co. Cleveland, O.

CONTRACTORS.
Wm. Swindell & Bros. Pittsburgh.
The S. R. Smythe Co. Pittsburgh.
Wickes Brothers Pittsburgh.

CRANES-LOCOMOTIVE.
Brown Hoisting Mach. Co. Cleveland, O.
Browning Engineering Co. Cleveland, O.

CLEVELAND CRANE & ENG. CO.
..... Wickliffe, O.
H. J. Koontz Pittsburgh.
Industrial Works Bay City, Mich.
Northern Eng. Works Detroit, Mich.

CRANES & HOISTING MACHINERY
Baird Machinery Co. Pittsburgh.
Browning Engineering Co. Cleveland, O.

CLEVELAND CRANE & ENG. CO.
..... Wickliffe, O.
Industrial Works Bay City, Mich.
H. J. Koontz Pittsburgh.

Link-Belt CompanyPhiladelphia.
Northern Engineering Works
.....Detroit, Mich.

CRUCIBLES.

Jos. Dixon Crucible Co....Jersey City.

CRUCIBLE STEEL.

McKenna Bros. Brass Co....Pittsburgh.
Wm. Jessop & Sons, Ltd....New York.

CUPOLA BLOCKS.

Stowe-Fuller Co.Cleveland, O.

CYLINDERS.

Mesta Machine Co.Pittsburgh
Wm. B. Scaife & Sons Co..Pittsburgh

COUPLINGS.

National Tube Co.Pittsburgh

COUPLINGS (Flexible).

Electric Con. & Mfg. Co..Cleveland, O.

CEMENT-HANDLING MACHINERY

Link-Belt CompanyPhiladelphia.

CHAINS.

Jones & Laughlin Steel Co..Pittsburgh.
Link-Belt CompanyPhiladelphia.

**CHAINS (Dodge, Ewart, Ley, Monobar,
Etc.).**

Link-Belt CompanyPhiladelphia.

CHAIN DRIVES.

Link-Belt CompanyPhiladelphia.

CHAIN HOISTS.

Link-Belt CompanyPhiladelphia.

CHAIN SLINGS.

Link-Belt CompanyPhiladelphia.

CONVEYORS (Belt).

Link-Belt CompanyPhiladelphia.

CONVEYORS (Flight).

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt CompanyPhiladelphia.

CONVEYORS (Screw).

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt CompanyPhiladelphia.

CHANNELS.

Jones & Laughlin Steel Co..Pittsburgh.
W. N. Kratzer Co.Pittsburgh.

W. G. McKenney & Co.Pittsburgh.
Wm. B. Scaife & Sons Co..Pittsburgh.

**COAL HAULING TRIPPLES, MINING,
WASHING & CRUSHING PLANTS.**

C. O. Bartlett & Snow Co., Cleveland, O.
Jeffrey Manufacturing Co..Columbus, O.

**COCKS (Iron Body and "High-Duty-
Metal")**

National Tube Co.....Pittsburgh, Pa.

COKE.

Bessemer Coke Co.Pittsburgh.
Reed F. Blair & Co.Pittsburgh.

Jamison Coal & Coke Co. ...Pittsburgh
McKeefrey & Co.Leetonia, O.

Pittsburgh-Buffalo Co.Pittsburgh.
Rogers, Brown & Co. ...Cincinnati, O.

L. & R. Wister & Co.Philadelphia.
Washington Coal & Coke Co..Pittsburgh

COLUMNS.

Jones & Laughlin Steel Co..Pittsburgh.
W. N. Kratzer Co.Pittsburgh.

Meehan Boiler & Con. Co. Lowellville, O.
Wm. B. Scaife & Sons Co..Pittsburgh.

**COLD DRAWN STEEL SHAFTING
AND SHAPES.**

Cumberland Steel Co..Cumberland, Md.

CONDENSORS.

Mesta Machine Co.Pittsburgh.
Southwark Foundry & Machine Co.
.....Philadelphia.

Moore, Lee C. & Co.....Pittsburgh.
Wickes BrothersPittsburgh.

CONSULTING ENGINEER.

Duff, Samuel E.Pittsburgh.
Kennedy, JulianPittsburgh.
Moore & Co., Lee C.Pittsburgh.

CONTRACT ROLL TURNING.

The Heinle CompanyPittsburgh.

CONVEYORS & ELEVATORS.

C. O. Bartlett & Snow Co..Cleveland, O.

Link-Belt CompanyPhiladelphia.

Jeffrey Manufacturing Co..Columbus, O.

COPING MACHINES.

Cleveland Crane & Eng. Co., Wickliffe, O.

CLAY MACHINERY.

American Clay Working Mach. Co.
.....Bucyrus, O.

Connellsville Mfg. & Mine Supply Co.
.....Connellsville, Pa.

Philips & McLaren Co.Pittsburgh.

Wickes BrothersPittsburgh.

COUPLING NUTS.

Cleveland Crane & Eng. Co., Wickliffe, O.

CUPOLAS.

Northern Eng. WorksDetroit, Mich.

Riter-Conley Mfg. Co.Pittsburgh.

CUPOLA BLOCKS.

United Fire Brick Co..Uniontown, Pa.

DITCHERS.

Browning Eng. Co.Cleveland, O.

DIES.

Cleveland Crane & Eng. Co., Wickliffe, O.

DRIFT PINS.

Cleveland Crane & Eng. Co., Wickliffe, O.

DOVETAIL ROLLS.

The Heinle CompanyPittsburgh.

DOUBLERS.

Cincinnati Punch & Shear Com-
panyCincinnati, O.

DIRECT MOTOR DRIVES.

Crocker-Wheeler Co....Ampere, N. J.

DREDGING MACHINERY.

C. O. Bartlett & Snow Co..Cleveland, O.

Jeffrey Manufacturing Co..Columbus, O.

**DRIVE WELL POINTS AND WELL
SUPPLIES.**

National Tube Co.....Pittsburgh, Pa.

DREDGE CHAINS.

Jeffrey Manufacturing Co..Columbus, O.

Link-Belt CompanyPhiladelphia.

DREDGES.

Jeffrey Manufacturing Co..Columbus, O.

Link-Belt CompanyPhiladelphia.

DROP HAMMERS.

Chambersburg Engineering Com-
panyChambersburg, Pa.

DRIVE CHAIN.

Link-Belt CompanyPhiladelphia.

DYNAMOS & MOTORS.

Crocker-Wheeler Co....Ampere, N. J.

H. J. KoontzPittsburgh.

Wickes BrothersPittsburgh.

ECCENTRIC ROLLS.

The Heinle CompanyPittsburgh.

ELECTRIC HOISTS.

Cleveland Crane & Eng. Co. Wickliffe, O.

Electric Con. & Mfg. Co..Cleveland, O.

ELECTRIC LIGHTING MACHINERY.

Crocker-Wheeler Co....Ampere, N. J.

Southwark Foundry & Machine Co.
.....Philadelphia.

Wickes BrothersPittsburgh.

ELEVATORS.

Jeffrey Manufacturing Co..Columbus, O.

Otis Elevator Co.Pittsburgh.

Scaife Fdry & Mach. Co....Pittsburgh.

ENGINEERS.

Alex Laughlin & Co.Pittsburgh.

Chambersburg Engineering Co....
.....Chambersburg, Pa.

Duff, Samuel E.Pittsburgh.

Link-Belt CompanyPhiladelphia.

Julian KennedyPittsburgh.

G. W. McClure Son & Co. ...Pittsburgh.

Morgan Construction Co.
.....Worcester, Mass.

Smythe, The S. R. Co....Pittsburgh.

Wm. B. Scaife & Sons Co..Pittsburgh.

United Eng. & Fdry Co..Pittsburgh, Pa.

William Swindell & Bro. ...Pittsburgh.

ENGINEERS—INSPECTING.

Gulick-Henderson & Co....Pittsburgh

ENGINEERS—LABORATORY.

Gulick-Henderson & Co....Pittsburgh.

ENGINEERS (Mechanical).

Link-Belt CompanyPhiladelphia.

EQUALIZING GEARS.

Link-Belt CompanyPhiladelphia.

ENGINES—STEAM.

Connellsville Mfg. & Mine Supply Co.
.....Connellsville, Pa.

H. J. KoontzPittsburgh.

Mackintosh, Hemphill & Co..Pittsburgh.

Mesta Machine Co.Pittsburgh.

Southwark Foundry & Machine Co.
.....Philadelphia

Wickes BrothersPittsburgh.

EXHAUST PIPE HEADS.

Direct Separator Co.Syracuse, N. Y.

FLANGING CLAMPS.

Chambersburg Engineering Com-
panyChambersburg, Pa.

Cleveland Crane & Eng. Co., Wickliffe, O.

FLANGE COUPLINGS.

Cumberland Steel Co..Cumberland, Md.

FLIGHT CONVEYORS.

Link-Belt CompanyPhiladelphia.

FORGINGS.

Cleveland Crane & Eng. Co., Wickliffe, O.

W. N. Kratzer & Co....Pittsburgh.

Wm. B. Scaife & Sons Co..Pittsburgh.

Heppenstall Forge & Knife Co.,
.....Pittsburgh.

Mesta Machine Co.Pittsburgh.

FORGING PRESSES.

Chambersburg Engineering Com-
panyChambersburg, Pa.

United Eng. & Fdry Co..Pittsburgh, Pa.

FOUNDRY EQUIPMENTS.

Raird Machinery Co.Pittsburgh.

Cleveland Crane & Eng. Co. Wickliffe, O.

Meehan Boiler & Con. Co. Lowellville, O.

Northern Engineering Works
.....Detroit, Mich.

Wickes BrothersPittsburgh.

FIREBRICK AND CLAY.

Bickford Fire Brick Co.Pittsburgh.

Clearfield Fire Brick Co..Clearfield, Pa.

Dover Fire Brick Co.Cleveland, O.

Kier Fire Brick Co.Pittsburgh.

Pittsburgh-Buffalo Co.Pittsburgh.

Stuart Fire Brick Company..Pittsburgh.

Sharon Fire Brick Co.Sharon, Pa.

Jos. Soisson Fire Brick Co.
.....Connellsville, Pa.

Sandy Ridge Fire Brick Co.....
.....Sandy Ridge, Pa.

The Stowe-Fuller Co.Cleveland, O.

United Fire Brick Co.Pittsburgh.

W. H. Wynn & Co. ...West Decatur, Pa.

FITTINGS (Electric Crane).

Electric Con. & Mfg. Co..Cleveland, O.

FITTINGS (Malleable and Cast Iron.)

National Tube Co....Pittsburgh, Pa.

FIRE ESCAPES.

W. N. Kratzer & Co....Pittsburgh

W. G. McKenney & Co.Pittsburgh

FIREPROOFING.

W. N. Kratzer & Co....Pittsburgh.

**FEED WATER HEATERS, FILTERS
AND PURIFIERS.**

H. J. KoontzPittsburgh

Petroleum Iron WorksSharon, Pa.

Wm. B. Scaife & Sons Co..Pittsburgh.

Wickes BrothersPittsburgh.

FURNACE BUILDERS.

Julian KennedyPittsburgh.

Alex Laughlin & Co.Pittsburgh.
Morgan Con. Co.Worcester, Mass.
G. W. McClure Son & Co. ...Pittsburgh.
Wm. B. Scaife & Sons Co...Pittsburgh.
The S. R. Smythe Co.Pittsburgh.
William Swindell & BroPittsburgh.
Tate, Jones & Co., Inc.Pittsburgh.

FLAG STAFFS.

National Tube Co.....Pittsburgh, Pa.

FLANGES (Cast and Malleable.)

National Tube Co.Pittsburgh.

FRICTION CLUTCHES.

Link-Belt CompanyPhiladelphia.

Wickes BrothersPittsburgh.

GALVANIZED SHEETS.

American Sheet & Tin Plate Com-
panyPittsburgh.

McCullough Iron Co...Wilmington, Del.

GAS BURNERS.

Tate, Jones & Co., Inc.....Pittsburgh.

GAS PRODUCERS.

Alex Laughlin & Co.Pittsburgh.

Morgan Con. Co.....Worcester, Mass.

Riter-Conley Mfg. Co.Pittsburgh.

Struthers-Wells Co.Warren, Pa.

The S. R. Smythe Co.Pittsburgh.

William Swindell & Bro. ...Pittsburgh.

GAS ENGINES.

Mesta Machine Co.Pittsburgh.

Struthers-Wells Co.Warren, Pa.

Wickes BrothersPittsburgh.

GATE SHEARS.

Cincinnati Punch & Shear Co., Cincinnati

Cleveland Crane & Eng. Co., Wickliffe, O.

GEARS.

Taylor-Wilson Mfg. Co....Pittsburgh.

Mesta Machine Co.Pittsburgh.

GEARING (Bevel, Mitre, Spur, etc.)

Link-Belt CompanyPhiladelphia.

GIRDERS.

Jones & Laughlin Steel Co...Pittsburgh.

Meehan Boiler & Con. Co. Lowellville, O.

W. N. Kratzer Co.Pittsburgh.

Wm. B. Scaife & Sons Co...Pittsburgh.

GAS AND AIR VALVES.

Taylor-Wilson Mfg. Co....Pittsburgh.

GRAPHITE.

Jos. Dixon Crucible Co....Jersey City.

GRAY IRON CASTINGS.

Cleveland Crane & Eng. Co., Wickliffe, O.

GREASE.

Jos. Dixon Crucible Co....Jersey City.

GUILLOTINE SHEARS.

Cleveland Crane & Eng. Co., Wickliffe, O.

GENERATORS.

Crocker-Wheeler Co.....Ampere, N. J.

Wickes BrothersPittsburgh.

HEAD FRAMES.

Riter-Conley Mfg. Co.Pittsburgh.

HIGH SPEED PUNCHES.

Cleveland Crane & Eng. Co., Wickliffe, O.

HOISTING ENGINES.

Otis Elevator Co.Pittsburgh.

Wickes BrothersPittsburgh.

HORIZONTAL DRILLS.

Baird Machinery Co.Pittsburgh.

HORIZONTAL PUNCHES.

Cincinnati Punch & Shear Co., Cincinnati

Cleveland Crane & Eng. Co., Wickliffe, O.

HOT METAL CARS.

Meehan Boiler & Con. Co. Lowellville, O.

HOT BLAST STOVES.

G. W. McClure Son & Co....Pittsburgh.

HYDRAULIC MACHINERY.

Baird Machinery Co.Pittsburgh.

Chambersburg Engineering Co.....

.....Chambersburg, Pa.

Lewis Fdry. & Machine Co...Pittsburgh

Mesta Machine Co.Pittsburgh.

Moore, Lee C. & Co.....Pittsburgh.

Scaife Fdry. & Machine Co...Pittsburgh.

HYDRAULIC VALVES AND FIT-**TINGS.**

Chambersburg Engineering Com-
panyChambersburg, Pa.

National Tube Co.Pittsburgh.

HYDRAULIC PUMPS.

Chambersburg Engineering Com-
panyChambersburg, Pa.

Moore & Co., Lee C.Pittsburgh.

Wickes BrothersPittsburgh.

INDUSTRIAL RAILWAYS.

Link-Belt CompanyPhiladelphia.

INSPECTION.

The Heinle CompanyPittsburgh.

Gulick-Henderson & Co.....Pittsburgh.

IRON FENCING.

W. N. Kratzer & Co.....Pittsburgh.

IRON ROOFS & BUILDINGS.

W. N. Kratzer & Co.....Pittsburgh.

Wm. B. Scaife & Sons Co...Pittsburgh.

Riter-Conley Mfg. Co.....Pittsburgh.

IRON & STEEL BARS.

W. G. McKenney & Co.Pittsburgh.

"KEWANEE" UNIONS & SPECIAL-**TIES.**

National Tube Co.....Pittsburgh, Pa.

LABORATORY ORE GRINDERS.

McKenna Bros. Brass Co....Pittsburgh.

LADLES.

Meehan Boiler & Con. Co. Lowellville, O.

Petroleum Iron WorksSharon, Pa.

LATHES.

Baird Machinery Co.Pittsburgh.

Wickes BrothersPittsburgh.

LIFTING MAGNETS.

Browning Eng. Co.Cleveland, O.

LINK-BELTING.

Jeffrey Manufacturing Co..Columbus, O.

Link-Belt CompanyPhiladelphia.

LOCOMOTIVE CRANES.

Browning Eng. Co.Cleveland, O.

Industrial WorksBay City, Mich.

Wickes BrothersPittsburgh.

LINK-BELT (Original "Ewart").

Link-Belt CompanyPhiladelphia.

LUBRICANTS.

Jos. Dixon Crucible Co....Jersey City.

MACHINERY.

Rosedale Fdry & Mach. Co..Pittsburgh.

MACHINE TOOLS.

Baird Machinery Co.Pittsburgh.

Wickes BrothersPittsburgh.

H. J. KoontzPittsburgh.

MACHINE SHOP GALVANIZING.

Rosedale Fdry & Mach. Co...Pittsburgh.

MACHINE BOLTS.

Riter-Conley Mfg. Co.....Pittsburgh.

MACHINISTS.

Link-Belt CompanyPhiladelphia.

MAGNETS (Electric Lifting).

Electric Con. & Mfg. Co..Cleveland, O.

MAGNESIA BRICK.

Stowe-Fuller Co.Cleveland, O.

MALLEABLE CASTINGS.

Jeffrey Manufacturing Co..Columbus, O.

MECHANICAL STOKERS.

Rosedale Fdry & Mach. Co...Pittsburgh.

METAL STAMPING & FORMING.

Avery Stamping Co.Cleveland, O.

METALLURGISTS.

Gulick-Henderson & Co.....Pittsburgh.

METAL CONFORMATION.

The Heinle Co.Pittsburgh.

MILLING MACHINES.

Baird Machinery Co.Pittsburgh.

SHEET METAL MACHINERY.

Cincinnati Punch & Shear Com-
panyCincinnati, O.

METAL WORKING MACHINERY.

Cincinnati Punch & Shear Com-
panyCincinnati, O.

MINING MACHINERY & SUPPLIES

C. O. Bartlett & Snow Co..Cleveland, O.

Connellsville Mfg. & Mine Supply Co.
.....Connellsville, Pa.

Jeffrey Manufacturing Co..Columbus, O.

Meehan Boiler & Con. Co. Lowellville, O.

Phillips Mine & Mill Supply Co....

.....Pittsburgh.

Scaife Fdry. & Machine Co...Pittsburgh.

Wickes BrothersPittsburgh.

MOTORS.

Crocker-Wheeler Co.....Ampere, N. J.

Riter-Conley Mfg. Co.....Pittsburgh.

Wickes BrothersPittsburgh.

MULTIPLE PUNCHES.

Cincinnati Punch & Shear Co., Cincinnati

Cleveland Crane & Eng. Co., Wickliffe, O.

OIL BURNERS.

Tate, Jones & Co., Inc.Pittsburgh.

ORE CARS.

Jeffrey Manufacturing Co..Columbus, O.

ORE & ROCK CRUSHERS.

Jeffrey Manufacturing Co..Columbus, O.

McLanahan & Stone, Hollidaysburg, Pa.

Phillips & McLaren Co.....Pittsburgh.

Wickes BrothersPittsburgh.

ORE HANDLING MACHINERY.

Brown Hoisting Mach. Co., Cleveland, O.

C. O. Bartlett & Snow Co..Cleveland, O.

Jeffrey Manufacturing Co..Columbus, O.

Link-Belt CompanyPhiladelphia.

ORE CONCENTRATORS & SEPA-**RATORS.**

McLanahan & Stone, Hollidaysburg, Pa.

PATENTS.

J. M. NesbitPittsburgh.

Siggers & Siggers ..Washington, D. C.

PAINT.

Jos. Dixon Crucible Co....Jersey City.

"PECK" CARRIERS.

Link-Belt CompanyPhiladelphia.

PIPE COILS.

National Tube Co.Pittsburgh.

PIG METAL, ORES, &c.

Columbus Iron & Steel Co..Columbus.

McKeefrey & Co.Leetonia, O.

Rogers, Brown & Co.....Cincinnati, O.

L. & R. Wister & Co.Philadelphia.

PENSTOCKS.

Riter-Conley Mfg. Co.Pittsburgh.

PIPE MILL MACHINERY.

Taylor-Wilson Mfg. Co....Pittsburgh.

PIPE JOINT COMPOUND.

Jos. Dixon Crucible Co....Jersey City

PILE DRIVERS.

Industrial Works.....Bay City, Mich

PILLAR CRANES.

Industrial Works.....Bay City, Mich

PIPES (RIVETED STEEL).

Riter-Conley Mfg. Co.Pittsburgh

BICKFORD FIRE BRICK COMPANY,

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For all high grade purposes,
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MANUFACTURERS OF

Highest Grade Pennsylvania and Ohio

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Manufacturers of

Magnesia, Chrome, Silica and High Grade Fire Clay Brick
for all metallurgical purposes

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Dead Burned Magnesite and Low Silica Chrome Ore of the highest quality.
CLEVELAND, O. PITTSBURGH, PA.

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For all Purposes, from the Famous Clearfield County Clays.

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WEST DECATUR, PA.

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MANUFACTURERS OF FIRE BRICK

FOR ALL PURPOSES, FROM CLEARFIELD COUNTY CLAYS.

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Established 1845

"SALINA"
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UNITED FIRE BRICK CO.

HIGH GRADE FIRE CLAY AND SILICA BRICK,
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Phones: Bell 1957 Court; P. & A. 1596 Main

Clearfield Fire Brick Co.

CLEARFIELD FIRE BRICK

OFFICE AND WORKS, CLEARFIELD, PA.

Sharon Fire Brick Company,

MANUFACTURERS OF

First Quality Hearth and No. 2 Brick
for Blast Furnaces.

First Quality Clay and
SILICA FIRE BRICK.

Office and Works: SHARON PA,

PIPE & PIPE FITTINGS.

National Tube Co.....Pittsburgh, Pa.
U. S. Cast Iron & Pipe Fdry Co..
.....Scottsdale, Pa.
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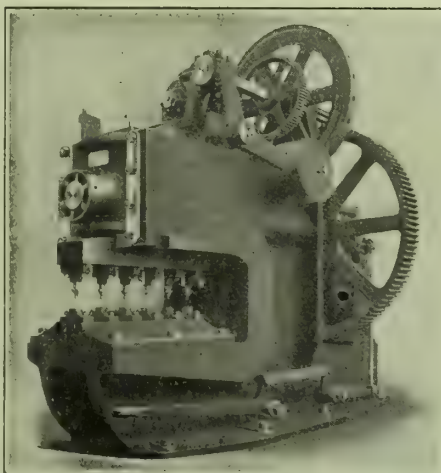


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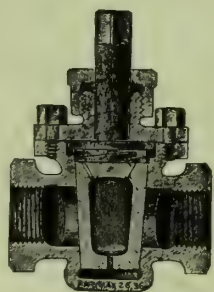
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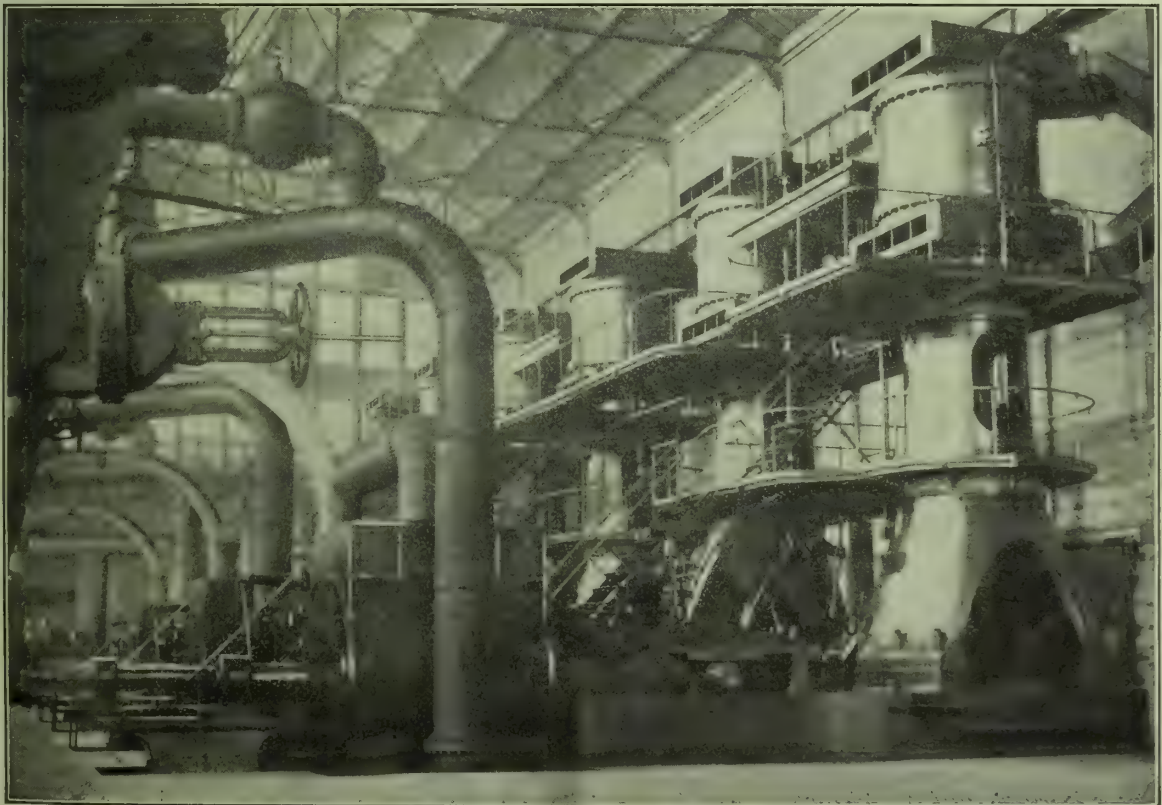
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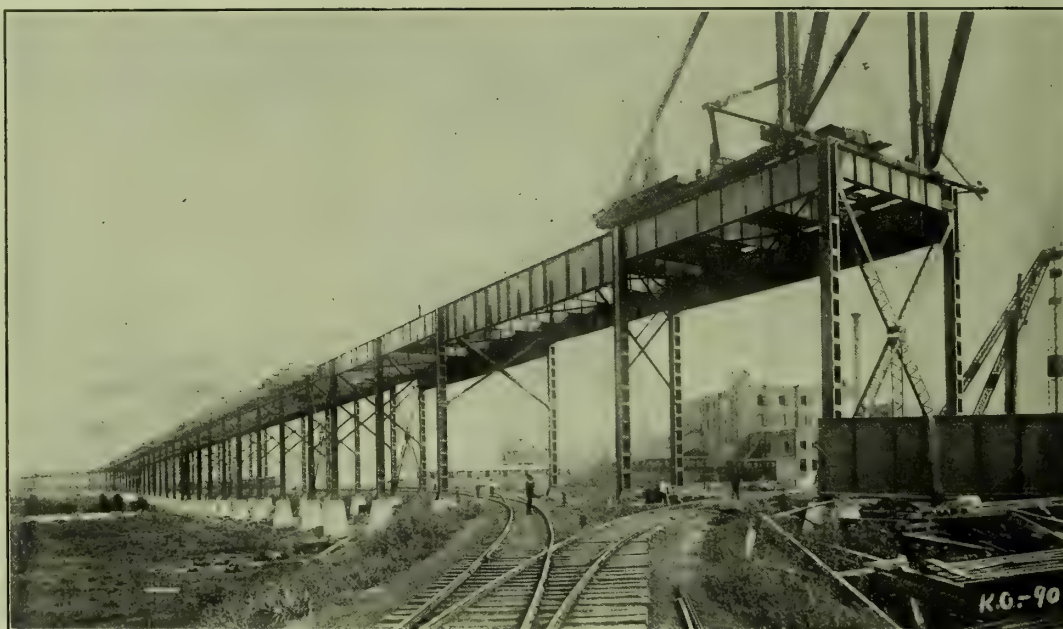
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FORTY-THIRD YEAR.

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Summary of General Iron and Steel Markets

HIGHER PRICES IN STEEL LINES FORECASTED BY THE WEEK'S ACTIVITIES—STEEL CORPORATION PROMISES NEW RECORDS IN IRON ORE SHIPMENTS AND PIG IRON PRODUCTION FOR AUGUST. PIG IRON REACHES NEW PRICE LEVELS THROUGHOUT NORTH, AND SOUTHERN IRON STRENGTHENS AT ESTABLISHED PRICES. FURNACES FINALLY QUOTE FOR 1910 DELIVERIES, AT SUBSTANTIAL ADVANCES—RAILROADS FAIL TO MAKE LIBERAL SHOWING EXPECTED IN RAIL AND EQUIPMENT ORDERS.

THE unmistakable quickening of demand for steel by finished product manufacturers during the week just ended was reflected in immediate preparations for a maximum production by the middle of September by the furnaces and steel mills, and in an almost sensational advance, during the week, in pig iron prices throughout the North.

A further effect, in additional price advances in steel lines, is predicted with considerable confidence. Independents continued to announce further advances above the minimum rate established by the Carnegie Steel Company for steel bars; the evident shortage in billets was intensified to the point where premiums were easily obtained for immediate shipments, and little secret was made of the intention to make an advance of \$1 a ton on shapes and plates soon after the 1st of September. Notwithstanding the extensively circulated declaration that the fabricating companies were filled with orders for months to come, there was lively bidding on a number of important structural contracts, indicating that the fabricators still have capacity to handle additional business.

The Steel Corporation will set a new record for ore shipments during August, and will break its record for pig iron production by nearly 100,000 tons. The

western situation was somewhat relieved when the new billet mill at Gary was speeded up to a new record output. The rail mill at Gary will produce 40,000 tons of rails for the month.

Despite these improved conditions in the general trade, and a demand for pig iron that has surprised the conservatives in the market, there is no disguising the fact that the buying movement by the railroads has not reached the large figures expected of it a month ago. Total freight car orders during the week were a little more than 3,000 steel cars; and the car plants are not running to nearly their full capacity. The large trunk lines are hanging back on further rolling stock, in the face of a threatened car famine. The orders thus far placed this year will not restore the equipment of the railroads to the 1907 basis, when the deterioration in rolling stock is taken into consideration. Few large inquiries are reported. Rail buying also was slack, and the reports of the taxing of the capacities of the Chicago and Gary plants for the remainder of the present year seem somewhat overdrawn; while the reservations thus far made for rails for 1910 by the big lines are barely over 200,000 tons. This in the face of the most liberal promises by the railroads at the time the Steel Corporation was induced to open its books for next year's

deliveries.

The establishment of Bessemer pig iron in Pittsburgh district firmly on a basis of \$16.50, Valley, which was a clean-cut advance of 50 cents over the prices of the week preceding, was accompanied in the Pittsburgh market by a sympathetic movement in other grades, both foundry and basic establishing new minimum levels. Basic sold during the week at \$15.50, with small lots, for the present year's delivery bringing \$16. The market was slightly at variance on foundry iron, and No. 2 can probably still be bought at \$15.50, Valley. For next year's deliveries, bona fide sales fixed the market at \$17 for Bessemer and \$16 to \$16.25 for No. 2 foundry.

Eastern foundries were in the market throughout the week for additional iron for this year's delivery, having underestimated their requirements. In general the advance in foundry iron has been about 50 cents in Eastern markets, on this movement. Virginia furnaces asked \$15, furnace, and Buffalo held firmly at \$15.75, furnace, for 2X foundry and \$16.25 for 1910 delivery. Southern iron was firmly established at the new level of \$13.50, Birmingham.

Additions to the list of active blast furnaces in the Shenango and Mahoning Valleys are promised before September 15. Four furnaces are ordered in blast in the Valleys before that date. The United States Steel Corporation will have 95 per cent of its blast furnace capacity in operation when the three idle furnaces now about to resume are in blast. Two of the Steel Corporation's furnaces resumed during the week just closed. One of the remainder that is ordered in is No. 1 stack at Columbus, which is to be operated in connection with the resumption of the Carnegie Company's steel plant at that point—the last of the idle Carnegie mills to resume.

There is still some talk in the east of the importation of foreign pig iron, billets and even plates, but the advance of prices in British markets would seem to deter any such movement under present conditions. Negotiations have been conducted for the importation of billets, but no important operations have been closed, and it is found that close figuring is required. The talk heard before the passage of the new tariff bill of the possibility of strong competition by British iron and steel in the American market seems unlikely to materialize with present price conditions.

Pittsburgh District Developments Depicted During the Week

SEVERN P. KER GOES TO SHARON STEEL HOOP COMPANY.

The most important change in personnel in Pittsburgh district companies in months is to be found in announcements made during the week just ended that Severn P. Ker, for several years vice president and general manager of sales with the Republic Iron & Steel Company, has resigned, effective October 1, to become general manager of the Sharon Steel Hoop Company, with headquarters at Sharon, Pa. The announcement of Mr. Ker's proposed change was received with expressions of most sincere regret by officials of the Republic Company, who esteemed him one of the most valuable members of the general executive staff. In his four years at the head of the sales department of the Republic, he is credited with having made a superb record as an organizer.

The Sharon Steel Hoop Company, a month ago increased its capital stock from \$1,000,000 to \$2,500,000, and Mr. Ker has become largely interested in the enterprise. Important extensions are being planned for the Sharon plant, though no definite announcements have yet been made. A new blast furnace is said to be among the probable new construction ordered, and also a sheet mill. It is expected that a line of high grade sheet specialties will be added to the concern's product, though the officers are silent as to details of the pending projects. The company is now building the last of a battery of five 40-ton open hearth furnaces.

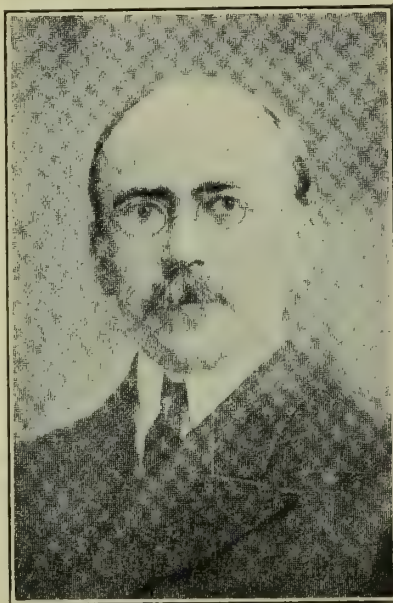
The official announcement by the Republic Company of Mr. Ker's retirement is as follows:

Severn P. Ker, vice president and general manager of sales of the Republic Iron & Steel Company, has resigned, to take effect October 1 next. Charles T. Johnston, assistant general manager of sales, will succeed Mr. Ker as general manager of sales, George L. Claypool, at present manager of sales of the Pittsburgh district succeeding Mr. Johnston as assistant general manager of sales and Walter W. Hall, assistant in the general sales office succeeding Mr. Claypool as manager of sales in the Pittsburgh district. These appointments all becoming effective as of October 1, next.

The Sharon Steel Hoop Company, in announcing the advent of Mr. Ker on its executive staff, says:

Severn P. Ker, at present vice president and general manager of sales of the Republic Iron & Steel Company having acquired a large interest in the stock of the Sharon Steel Hoop Company, will, October 1, next, become associated with the Sharon Steel Hoop Company, in the capacity of general manager. Upon assuming this position, Mr. Ker will be

located at the general office of the Sharon Steel Hoop Company, at Sharon, Pa. It is the purpose of the Sharon Steel Hoop Company to broaden its field of operations and develop particularly in the line of high grade specialties. Mr. Ker was invited into the organization because of his long experience in connection with the manufacture of high-grade steel specialties, acquired during his 15 years' connection with the firm of Smith Brothers & Company, later the La Belle Steel Company, at their plant in lower Allegheny, which, upon the organization



SEVERN P. KER.

of the Crucible Steel Company of America, was merged into that company.

"In the loss of Mr. Ker we feel as though we had sustained a death in the family," was the personal tribute paid the retiring official by President T. W. Guthrie, of the Republic Company.

IMPROVEMENTS FOR COLONIAL STEEL COMPANY.

Details of the plan by which the Colonial Steel Company, of Pittsburgh, will issue \$750,000 new stock, for the purpose of enlarging and improving its plant at Colonia, Pa., were perfected August 26.

The present outstanding capital of the company is \$1,250,000, and it is proposed to have this stock take the place of common stock, while the new stock will be preferred as to assets and dividends. It will carry a 7 per cent cumulative dividend, and when the earnings have reached a point where the common can give the same rate of dividend the two classes of stock will share equally in the dividend rate.

It is stated that the stock has been

underwritten by a Pittsburgh syndicate, and a portion of it will be offered to the public later.

The Colonial Steel Company has been in operation for several years, and during that time has put on the market a welded steel and copper product which has been found most satisfactory. It has been passed through the most severe tests, and has met all of them in the most gratifying manner. The product of the plant can be made into almost every form, and has attracted much attention. One of the principal uses to which it is being put is in wire, the steel core giving the strength while the copper around it gives the desired insulation. The material is also turned out in sheet form and can be converted to almost any use where either of the metals is also desired. With steel as a base brass is also used in the same way as copper.

The company's crucible steel department has seven 24-pot and two 36-pot furnaces. The open hearth department was added in 1906, with two stationary basic furnaces. The rolling mill and forge department contains 12 single puddling furnaces, 30 heating furnaces, four annealing furnaces, three forge fires, 9 hammers and 9 trains of rolls.

SHIPPING TO RUSSIA.

The Keystone Driller Company, Beaver Falls, Pa., will this week complete a shipment of eight drilling machines to Russia to be used by the Lena Gold Mining Company, of St. Petersburg, in gold placer mining testing. The company is well supplied with orders for both foreign and domestic shipment. The foundry and pump departments are behind with orders and the capacity of the forging department is being increased.

A brick building is being erected to take the place of the carpenter shop destroyed by fire recently. Electrically driven machinery is being installed.

RESUMING OPERATIONS.

The Keystone Steel Foundry Company's plant, Avonmore, Pa., is operating its gray iron department and making preparations to put the steel casting department in operation during September. The plant is equipped with a 10-ton open hearth furnace, an 8-ton cupola, a Tropenas converter, a 5-ton and a 10-ton crane. The company manufactures a general line of steel and iron castings and makes a specialty of rolling mill and plate glass factory work. Louis Bregazer is general manager.

AT NEARBY PLANTS.**Sold at Receiver's Sale.**

The Washington (Pa.) forge, sheet and tin mills were bought in at receivers' sale August 25 by a party of Waynesburg capitalists for \$22,000. A stock company will be formed to operate the mills. The plant has been idle for five years. It has four black plate mills, two of which can be put in running order in a few days. The purchase was made through John H. Strawn, receiver of the Farmers & Drovers' National Bank, and Carl H. Bowby, receiver of the Waynesburg forge, sheet and tin mills.

The plant was built in 1900. It consists of three billet heating furnaces, six sheet and pair furnaces, six annealing furnaces, seven hot mills, three cold mills and one 6,000-pound hammer. The product is sheet iron and steel and black plates. The hot mills consist of one 24-inch sheet bar mill, two 42-inch sheet and four 32-inch black plate. The forge was added in 1901 for manufacturing charcoal knobbled blooms, and a separate galvanizing department was built.

Reorganizing Middleton Works.

Negotiations for the reorganization of the control of the Middleton (Pa.) car works are proceeding slowly. The changes are being worked out by Pittsburgh people. A new charter has been taken out by the Middleton Car Company, the incorporators being Alexander Black, Ralph Longenecker and William K. Johnson. Mr. Black, who is a Pittsburgh attorney, refused to discuss the details of the reorganization. The management at Middleton know nothing of the progress made. It is said, however, that the plant is to be put on a good running basis and in the neighborhood of 800 men will be employed there. It is believed that Arthur King, president of the car works, will be retained, but that the other officials will be transferred. George I. King, who has been vice president for the past eight years, expects to be moved.

Demand for Fire Brick.

The West Virginia Fire Brick Company, Diamond National Bank building, Pittsburgh, is operating its three plants at New Cumberland, W. Va., at capacity. The plants are running on fire clay and fire brick and are well supplied with orders in these lines. Orders for paving brick are reported to be lighter in comparison with the other lines.

Stove Foundry Busy.

The Olive Stove Works, Rochester, Pa., is being operated at capacity and the company is well supplied with orders. Joseph M. Aiken, general man-

ager of the works was in Pittsburgh last week placing orders for a supply of iron for the last quarter. Mr. Aiken stated that his plant had been operated steadily during the depression and that he is melting eight tons daily. The company recently placed an improved gas range on the market which has proved a ready seller and is producing numerous important orders.

Rebuilding Burned Plant.

The Wheeling Metal & Manufacturing Company, which sustained a \$50,000 fire loss ten days ago, has started the erection of two temporary buildings. A portion of the machinery has been installed already. The erection of a similar plant at Glendale is being rushed and it is the expectation to have everything in working order within two months.

New Pile Contract.

The Raymond Concrete Pile Company of Chicago and New York, through its Cincinnati representative, Charles H. Glandorf, has secured the contract for placing Raymond concrete piles in the foundations of an automobile building for Haberer Brothers, Gest and Evans streets, Cincinnati, O. Albert Kuball is the architect for the building.

Operating Steadily.

The Alcania Company, Murtland building, Pittsburgh, is operating its tin plate plant at Avonmore, Pa., steadily with satisfactory future prospects. The plant is equipped with one 2-inch bar mill, three 26-inch hot mills, and three 22-inch cold mills and has an annual capacity of 7,500 tons.

Shovel Factory Resumes.

The Waynesburg (Pa.) Shovel factory resumed operations after a shutdown of six weeks during the hot weather. The plant has enough orders ahead to keep it busy for some time to come.

RESUMPTION BY THE AMERICAN STEEL FOUNDRIES CO.

The Franklin, Pa., plant of the American Steel Foundries Company, has been ordered to resume on September 1, after an idleness of 18 months. The Sharon plant, which also has been shut down for a long period, will resume about the middle of the month. The entire capacity of the Pittsburgh plant of the company was working during the week just ended.

R. H. Donaldson, of Chicago, has been located permanently at Franklin as the local superintendent. There is enough raw material on hand at the plant to operate for several months. The Alliance, O., plant of the company, is still idle, but that at East St. Louis is operating part turn.

INSTALLS NEW SHOP.

The Hyde Park Foundry & Machine Company, Hyde Park, Pa., manufacturers of rolls and rolling mill machinery, recently completed the erection of a new machine shop which will largely increase the capacity of the plant. The new building is a steel frame structure 80x160 feet and is equipped with a 15-ton Morgan crane, a heavy slotting machine, lathes for handling all sizes of rolls, and other machine tools. Two 40-horse power dynamos have been installed to supply power to the various machine tools and an additional 65 K. W. generator has been installed in the power house.

The foundry department is equipped with two 15-ton air furnaces, a 30-ton cupola, a 15-ton and a 20-ton crane. Rolls and castings up to 20 tons are cast. The company contemplates the erection of an open hearth furnace for the manufacture of steel castings.

The company reports orders for both light and heavy castings to be improving and prospects favorable for a steady run. Among orders recently filled was the equipment of a 26-inch sheet mill for the Cannonsburg Sheet & Iron Works, Canonsburg, Pa.

The officers of the company are Thomas McCausland, president; James Lee, vice president; N. H. Stonaker, secretary and treasurer.

TO RAISE OLD BRIDGE.

J. W. Aris, of Pittsburgh, representing the war department, has submitted to the Armstrong county (Pa.), authorities plans for raising the Kittanning bridge over the Allegheny river 19 feet. This would place the bridge 50 feet above the pool level, and raise the grade of the approaches. A hearing in regard to the project will be held in the court house at Kittanning, in November.

IN LOCAL MACHINE SHOPS.

The new machine shop at the A. M. Byers Company plant, Pittsburgh, has been put in operation and will materially increase the efficiency of the plant. The new department is operated electrically.

The W. R. Beatty Machine & Equipment Company, Pittsburgh, has secured quarters at No. 30 Carson street, which is being equipped with power and machinery for prosecuting repair work.

The Rosedale Foundry & Machine Company is engaged on contracts for gray iron, steel castings and machinery to be used in the construction of the Isthmian canal at Panama. The company's plant, Northside, Pittsburgh, is being operated at capacity.

THE TIN MILL STRUGGLE.

The American Sheet & Tin Plate Company, further increased its capacity at the tin plants in the Shenango Valley district during the week, despite the efforts of the striking tin mill workers. Over half of the South Sharon tin plate plant resumed August 24, 12 out of 20 hot mills being in operation. At New Castle a clash between strikers and State police on August 23 failed to end seriously. At the company's sheet plant at Struthers, the work of breaking the strike has so far progressed that it is no longer necessary to house the workmen in the mill, and they have been put in lodging houses in the vicinity. The burgess at South Sharon has refused to acknowledge the necessity of State police, and all is quiet there.

At the Girard mill of the A. M. Byers Company, the strike of the Amalgamated workmen at the tin and skelp department has been settled, most of the old employes returning to their positions. The company did not recognize the association, but agreed to pay the Amalgamated scale. The skelp mill has been newly organized by the Amalgamated Association.

Additional sheet workers went to work during the week at the Youngstown plant of the Youngstown Sheet & Tube Company, where the Amalgamated Association declared a strike against the open shop order, a month ago. The company issued an announcement that all its sheet mills were running once more, and that the strike was at an end so far as this plant is concerned. The new workmen are still lodged within the plant. The striking sheet workers are making an effort to persuade the machinists at the plant to join forces with them. A committee of the machinists, with a number of local grievances, was refused an audience by the company officials. The men have taken no action.

RIOTS AT CAR WORKS.

The death roll from a series of battles between State constabulary and striking car workers at the McKees Rocks plant of the Pressed Steel Car Company, Pittsburgh, on the night of August 22, reached a total of eight, with a score more or less seriously wounded. Three troopers lost their lives. Predictions of trouble during the following week were not borne out by developments, for the State police succeeded in keeping order without a call for the military. The effect of the trouble, however, was to still further demoralize the force of strike breakers with which the company was attempting to operate its plant. As a result of charges of peonage within the plant, the Federal authorities at Pittsburgh conducted an investigation dur-

ing the week, taking the testimony of strike breakers who had made complaint, and finding nothing worse than stories of rather rough treatment by the bosses. The investigation developed the fact that the New York strike-breakers were brought to Pittsburgh on 30-day contracts, their railroad fare home being guaranteed if they worked the full 30 days.

As a result of the riots, the company during the week took out the largest industrial insurance policy ever taken on a single Pittsburgh plant, for a total of \$4,000,000. The strikers lost their suit in court to compel the company to submit to arbitration, under an old law.

PENNSY TO TREAT TIES.

In furtherance of its policy to prolong as long as possible the life of cross ties and thereby minimize the consumption of timber, by treating ties with creosote, as well as by growing trees for cross tie purposes, the Pennsylvania Railroad Company has just awarded a contract for the erection of a complete pressure wood preserving plant at Point House Pier, Greenwich Point, Philadelphia. In addition to the plant to be constructed, the company has one at Mount Union, Pa., and a small experimental plant at Greenwich Point, both of which are in successful operation. It is estimated that proper treatment will increase the life of cross ties from two to three fold. Applied to all of the 100,000,000 ties which American railroads use annually, it would greatly reduce the drain on the rapidly decreasing timber resources. The Pennsylvania Railroad alone uses from 3,500,000 to 4,000,000 ties each year for renewals and new work. The average life of these red oak and chestnut ties under present conditions in main running tracks is from three to four years, while white oak lasts from seven to eight years. It is estimated that preservative treatment will increase the life of red oak and other treatable ties to at least 15 years.

STEEL MANUFACTURING IN CHINA.

Theodore D. Morgan, of Sharon, Pa., formerly vice president and general manager of the Atlanta Steel & Tin Plate Company, of Indiana, who has just returned from a 13 months' trip around the world, has been abroad during that time studying manufacturing and economic conditions in various countries, particularly in regard to the iron and steel industry. Mr. Morgan is reported as follows:

"The manufacture of steel bids fair to become a great industry in China. From what I saw during my two months' stay in that country, I know

the iron ore deposits are immense. The Hanyang Iron & Steel Works are situated at Hankow, 600 miles inland on the Yangtse-Kiang river. These works are on the banks of the Han river, at its confluence with the Yangtse-Kiang, which at this point is more than a mile wide and of such depth that large ocean-going steamers from all parts of the world sail to Hankow. Steel has been manufactured at the Hanyang works since 1894, up to which time only iron had been manufactured. The works consist of two blast furnaces with a capacity of 120 tons per day each, and two 250-ton furnaces are now being built. There are six 30-ton basic open hearth furnaces and one 10-ton furnace used for melting scrap. The other furnaces receive fluid pig from the mixers, the duplex process being used, the pig being washed in an open hearth furnace to free it from phosphorus. Two new 15-ton Bessemer converters are being put in. One Wellman pig mixer is in use and another is to be installed. The open hearth furnaces are charged by a Wellman charger. All the steel is top cast, two ingots at a time, the ladles having two stoppers. The ladles are handled by a 50-ton electric crane.

"The present rail mill makes 250 tons of 85-pound rails per day. This mill is now being remodeled to roll rails direct from the ingot, and will roll them 180 feet long. After remodeling operations are completed the mill will produce 750 tons a day. A beam mill is also being changed to roll greater lengths, which will increase its capacity from 250 tons up to 350 tons per day. The work is good and the steel produced is of high quality.

"The company employs about 20,000 people. Common laborers receive about seven cents a day for able-bodied men; women are paid about five cents a day. Other wages are as follows, per month, amounts being reduced to equivalent in American money:

	Per Month.
Rollers on mills	\$4.00 to \$ 6.00
Heaters on furnaces.....	6.00
Helpers on furnaces	4.00 to 5.00
Open hearth steel smelters.	5.50
First helpers	5.50
Second helpers	4.00
Blacksmiths	7.50 to 20.00
Boiler makers	7.50 to 10.00

"Such prices as these for skilled labor and a maximum of about 45 cents a week for common laborers at the mines place the production of steel out of competition with like product in this country. Another important plant is in course of erection at Hankow, the Yangtse Engineering Works. These works will build ships, engines, boilers and general machinery, and will also make iron pipe. About 1,000 men have been employed to start in these works."

WAITING FOR CAR ORDERS.

There is still considerable marking time by the car companies, waiting on promised large orders for equipment by the railroads. With the exception of the American Car & Foundry Company, whose capacity at its principal plants is well filled, none of the car companies are running to their full capacity. There is no sign of an early settlement of the labor troubles at the McKees Rocks plant of the Pressed Steel Car Company, and for this reason that concern has not figured largely in recent lettings.

New orders reported during the past week were:

Ann Arbor—500 flat bottom drop cars to Standard Steel Car Company.

Rock Island—2,000 cars, of which 1,000 go to the Western Steel Car & Foundry Company, 500 to Standard Steel Car Company, and 500 to American Car & Foundry Company.

Union Railroad (subsidiary of Carnegie Steel)—400 box cars from Pressed Steel Car Company.

Pittsburgh & Lake Erie—50 flat steel cars from Pressed Steel Car Company.

Aliquippa & Southern (subsidiary of Jones & Laughlin's Company)—40 cars, various types, from American Car & Foundry Company.

The Great Northern is in the market for 500 to 1,000 cars of various design; the New York, Ontario & Western wants 500 hopper gondolas with steel underframes and the Erie is in the market for 100 furniture cars. The Baltimore & Ohio is said to be preparing to let an additional order for 1,000 box cars, 500 refrigerator and 500 ventilated cars. The Texas Southeastern will buy 50 flat cars. In Canada the Grand Trunk is reported to be in the market for 200 stock cars, 700 box cars, 300 flat cars and 200 refrigerator cars. Car companies are now working on the Chesapeake & Ohio's 2,000-car order, and similar orders from the Chicago Northwestern and the Burlington.

Recent locomotive orders are 35 for the Great Northern, 5 for the Burlington, 17 for the Northern Pacific, 20 for the Alabama Great Southern, with scattering orders amounting to 50 and an inquiry from the Baltimore & Ohio for 60 steam and two electric locomotives.

INSPECT NEW SKYSCRAPER.

Officers of the National Fire Proofing Company who met in Pittsburgh, August 27 to discuss the building outlook, report a marked improvement in all of the large cities. Among those at the meeting were Vice Presidents E. V. Johnston, of Chicago, and H. M. Keasbey, of New York. They had a conference with President W. D. Henry and

Vice President R. W. Allison, and inspected the new Henry W. Oliver building.

The company has installed in this building a mortar carrier which lifts mortar from the mixing boxes in the basement to the top floors. The mortar is used to set the hollow tile. The new device, which had never before been tried, is the invention of Dudley Nee, one of the superintendents of the company. One of the superintendents of the company with the operations of the carrier and the rapid progress being made on the building.

Mr. Keasbey said that there had been a wonderful improvement in the building situation in New York—better than it had been for several years—and Mr. Johnston said that Chicago was enjoying a splendid business, the building trade there being in better condition than for two years.

DOUBLING FURNACE CAPACITY.

The National Roll & Foundry Company, Farmers Bank building, Pittsburgh, has placed a contract with William Swindell & Brothers, Pittsburgh, for the erection of a 15-ton air furnace at its plant at Avonmore, Pa. The additional furnace will double the capacity of the chilled roll department of the plant. Operations were recently resumed at the plant and the company reports a generous supply of orders.

EQUIPMENT INQUIRIES.

Pittsburgh engineers are anticipating inquiries during the week from the Forged Steel Wheel Company, a subsidiary concern of the Standard Steel Car Company, for the equipment of the new plant to be erected at Butler, Pa.

The equipment will consist of six open hearth furnaces of 60 tons capacity each, a slabbing mill to roll wheel blanks, electric cranes and other appliances.

THE ELECTRICAL OUTLOOK.

Officers of the Westinghouse Electric & Manufacturing Company, declare the outlook in the electrical business of the country is even better than during the boom time of 1906 and 1907. The steam railways alone are figuring on electrification work which will keep all the large electrical manufacturing companies busy during the next five years while the inquiries from other sources are pouring in steadily.

Already four to six month deliveries are required for all apparatus not actually in stock. The weekly orders to the Westinghouse Electric & Manufacturing Company in July averaged 4,200 or at the rate of 600 a day, and it is as-

serted that August is breaking even that record.

Westinghouse officials deny the report that prices 10 per cent higher than those received eight months ago are being charged by electrical equipment manufacturers. The producers in this line have been content with the old price levels.

INTRODUCING NEW LINE.

The Ingram-Richardson Manufacturing Company, Beaver Falls, Pa., has completed improvements to its plant which will about double its capacity and is operating full in all departments. The company manufactures a line of enameled iron products and recently placed on the market a line of one-piece enameled refrigerator linings and other specialties.

FOR LARGE-SIZE PIPE.

Two lettings for gas pipe lines of large size were reported in Pittsburgh during the week—one by the Pennsylvania Connecting Gas Company, for 30 miles of 16-inch pipe, and one by the Kansas Natural Gas Company, for 10 miles of 18-inch.

WELSH VS. CANADIAN TINPLATE.

English papers are declaring that the last has probably been heard of the attempt by the Canadians to establish tinplate works. In order to help the Morrisburg Company, the customs department brought the anti-dumping clause to operate on tinplates, but though it prevented the dumping of plates by American makers, it proved to be of no material benefit, and the clause has now been withdrawn. The Morrisburg works were acquired by a new company, who endeavored to secure additional capital from Wales, but without success, and the works have now been converted into galvanized sheet works. Whether they will pay as such remains to be seen. Meantime the Welsh works are preparing for a greater output. London trade papers enumerate 20 to 25 more mills put on during the first two weeks of August.

CHICAGO CONCRETE CONTRACT.

The contract for building 1,000 feet of reinforced concrete docks for the Deering Works of the International Harvester Company, Chicago, has been awarded to the Raymond Concrete Pile Company, of New York and Chicago. W. D. Price, engineer. The docks will be located along the north branch of the Chicago River.

Review of Industrial News From All Sections of the Country

TO DIVIDE ARMOR PLATE CONTRACTS.

According to advices from Washington, the contracts for the \$5,500,000 worth of armor plate for the two new first class battleships, bids for which were opened at the Navy Department August 18, will be divided about equally between the three armor producing concerns of the country, the Carnegie Steel Company, Bethlehem Steel Company and Midvale Steel Company.

Midvale having broken into the game three years ago with a bid that cut under the prices charged by Carnegie and Bethlehem and that released the Government from the payment of any royalties for the use of patented processes, evidently has seen the futility of cutting rates and has gradually moved its prices up until they now are so nearly identical with those submitted by its other two competitors as to insure a division of the contract. The result of the Midvale Company's advent into the armor producing field has been a good thing for all concerned except the two big concerns that had heretofore furnished all the armour for the United States Navy. It has saved the Government immense sums that were previously paid to the Harvey Continental Company for royalties on the Harveyized face hardening process and for the Krupp process, and it had let the Midvale Company in for a third of all the contracts in the future. But what is more important from the standpoint of the Navy Department it has established another plant for the manufacture of armor, thereby greatly increasing the possible output of this material in the event of a war crisis.

The bids opened called for 11,486 tons of class A, 910 tons of class B, 360 tons of class C, 130 tons of class D and 98 tons of class E. Midvale, Carnegie and Bethlehem all bid the same for class A, \$420 a ton. For class B Midvale bid \$415, Carnegie \$420 and Bethlehem \$418. For class C Midvale bid \$470, Carnegie \$490 and Bethlehem \$470. For class D Midvale's bid was \$590, Carnegie's \$600 and Bethlehem \$587. For class E Midvale bid \$512, Carnegie \$600 and Bethlehem \$508. Each concern agrees to begin deliveries on February 18, 1910, and to continue at the rate of 600 tons a month.

These bids being so nearly identical it is certain that the department will divide the order equally, especially as it is the department's policy to give each armor-producing concern a portion of the Government's work, unless the discrepancy

in the bids is too great.

In 1907, when the Midvale Steel Company of Philadelphia began its campaign for Government armor contracts, it bid \$398 for class A armor, \$393 for class B, \$388 for class C and \$385 for class D. The prices were much below those submitted by Carnegie and Bethlehem, and furthermore Midvale agreed to furnish the armor at these prices flat, without any provision regarding royalties. The Government had been paying \$420 a ton for classes A and B, and in addition had paid a royalty of \$33 a ton on the former and \$11.20 a ton on the latter, these being the charges made by the Krupp and Harvey companies for their face hardening processes.

The Bethlehem and Carnegie companies having the exclusive control of these hardening processes in this country, it was a mystery how the Midvale Company expected to make armor that would meet the specifications, and this doubt, together with the fact that the company had no armor plant, but would have to install one, led the Navy Department to split the contract, giving a small slice of it to Midvale. This contract was carried out and the armor met the tests in every respect. Since that time the Government has not been asked to pay any royalties. The great secret process of the Krupp works evidently is a secret no longer, or if it is it has been superseded by other processes that are just as effective.

At later biddings for contracts the Midvale Company raised its bargain-counter rates on class A from \$398 to \$410, and the prices for other classes were advanced in proportion, the company getting a piece of each contract let. Carnegie and Bethlehem stuck to their prices, varying them but little, except to abrogate the provision regarding royalties. At the last preceding letting Midvale had come up to the prices of its competitors for class A, but was lower on the other three classes, and now that concern has gone the whole length and bid the same as the other two concerns on the class A, and higher than the others on some of the other classes. Competition is thus wiped out and the armor triumvirate stands supreme in the field.

The Navy Department has never concerned itself about collusion charges in connection with the bids, being satisfied with the getting what is considered the best armor in the world at prices lower than is paid by other nations. Another competitor for armor contracts would be welcomed because it would result in the establishment of another plant that could

be called into use in the event of an emergency.

COAL TAR AS COATING FOR IRON PIPE.

In a paper read before the annual meeting of the Illinois Gas Association, Robert B. Harper considers clean coal tar pitch, free from water, acids or soluble mineral matter, as the most efficient type for covering for the prevention of soil and electrolytic corrosion of iron pipes. Such a pitch, he states, should be as hard as it is possible to make it without being brittle at ordinary temperatures, and should not crack when struck a hard blow. The pipes to be coated should be smooth, free from moisture, rust and loose scale or any foreign matter. Burrs or other projections of metal should be filed down before coating. The clean pipe should be left in a melted bath of pitch until the metal and dip are of the same temperature, which should be just sufficient to melt the pitch to a uniform liquid condition. The pipe, when removed, should have a smooth uniform, black, glossy coating, 1-32 inch thick and free from lumps, bubbles or foreign matter. It may be profitable to wrap the cold coated pipe with an overlapping strip of a tough, yet flexible paper, or with cloth, and reimmerse the wrapped pipe in a slightly softer pitch only long enough to saturate and coat the paper or cloth. Coal tar pitch may also be used for a field coating. Careful work is imperative, because one bare spot in a pipe concentrates there the whole corrosive effect of stroy currents. Mr. Harper places the cost of treating 2-inch pipe at 1½ cents per running foot, which includes labor, material, heat for melting dip, inspection and incidentals. These conclusions are the result of experiments with many types of protective coatings.

TIN PRICES FIRM.

The New York tin market continued firm during the week just ended. Spot, August and September tin closed August 25 at \$30.30@30.40; October at \$30.35@30.47½; November at \$30.35@30.50, and December at \$30.40@30.50. No sales were reported. The London market was easy, with spot closing at £137 12s 6d and futures at £138 15s. Lead was steady, with spot quoted at \$4.42½ New York, and at \$4.25@4.30 East St. Louis. The English market was unchanged at £12 8s 9d. Spelter was quiet, with spot closing at \$5.70@5.80 New York and at \$5.60@5.65 East St. Louis.

ENGLISH STEEL MAKERS WITNESS UNIQUE TESTS.

The New York Herald cable service of August 21 told in some detail of a series of demonstrations of a new steel making process in London during the week preceding. The Herald's London correspondent says:

M. Martin Kallman, president of the Oriental Trust Company, of Paris and London, is in London again on business in connection with a new process he is developing for turning iron of all grades into fine steel.

On Thursday and Friday I accompanied Mr. Kallman to the laboratory he has established in South London and witnessed several demonstrations of the process in which many different iron objects were "steeled." Present also were several engineers and expert steel makers, representing prominent British firms of structural steel, armor plate, car wheel and axle makers, cutlery and tool manufacturers.

Every possible precaution was taken to insure the absolute certainty of the results obtained. This process of turning iron into fine steel usually takes about 12 hours. Throughout the tests the engineers or their representatives were present, watching every move to make absolutely certain of the genuineness of the metals.

The first test was with a plain bar of iron. This was coated with a peculiar chemical powder and placed in an airtight retort in a furnace. The result was the entire bar was transformed into steel, which the experts pronounced after testing it to be of very fine quality. Models of several steel objects were worked up in ordinary iron and put through the process successfully. Some were made into solid steel, while on others only the outer surface was transformed into steel. An iron car wheel was given a steel rim and a heavy iron chain was turned into solid steel at one end, which graduated into a thin coating over the iron at the other end. There was no question of the steel being fixed onto the iron. It was clearly demonstrated that in every case the iron itself was transformed into steel.

"The peculiar thing about this process," said Mr. Kallman, after the tests were finished, "is that low-grade, cheap iron can by our method be transformed into a higher grade of steel than other and better grades of iron. We don't know much about this feature yet, but our experiments are teaching us a great deal.

"I estimate that we can take a piece of iron costing two cents a pound and put it through our process at a cost of five cents a pound and produce steel which at the lowest valuation to-day is

worth \$1 a pound. Other methods would cost from 10 to 20 times as much."

SOUTHERN ACTIVITIES.

Southern industrial activities are being given great space in trade journals, booming that section. The "Manufacturers' Record," Baltimore, gives the following new plants and developments as planned or under way:

The Central Textile Corporation, Memphis, was organized with a capital stock of 1,000,000, and will install 25,000 spindles and 300 looms, driven by 1,000 electrical horsepower. The Pike County Waterpower Company, Little Rock, Ark., engaged an engineer to plan the development of its waterpower and to build its proposed plant for transmitting 10,000 horsepower by electricity, near Murfreesboro. The Riverside Cotton Mills and the Dan River Power & Manufacturing Company, Danville, Va., consolidated, and will incorporate as the Riverside & Dan River Cotton Mills, with a maximum capital stock of \$10,000,000; this new company is building another mill to have 50,000 spindles and 1,500 looms; the additional mill will cost \$1,000,000. The Austin Gap Colliery Company, Bristol, Tenn., was incorporated with \$150,000 capital, to develop coal mines.

The Maryland Portland Cement Company, Baltimore, is planning to erect additional buildings and install machinery to increase the daily capacity of its plant, at Security, from 800 to 1,800 barrels of Portland cement. The Chalmette Cypress Company, New Orleans, has awarded contracts for sawmill machinery for a plant to have an annual output of 16,000,000 feet of lumber, cost of buildings, machinery, etc., estimated at \$150,000. The National Mining & Power Company, Birmingham, Ala., was incorporated with a capital stock of \$250,000. The Central Railway of Georgia, Macon, Ga., has awarded a contract for the construction of woodworking and blacksmith shops to cost \$75,000.

DOCKS FOR ASHTABULA.

City officials of Ashtabula, O., have announced the successful termination of the negotiations between the city and the Great Lakes Engineering Company, for the removal of its St. Clair (Mich.) plant to Ashtabula. The only step remaining to complete the deal is the approval by the people of the city of a bond issue, not to exceed \$400,000, to provide money for improving the river to give harborage to the proposed plant. Within two years the plant expects to employ 2,000 men, with capacity for three ship building berths and two dry docks.

REPUBLIC STEEL REPORT.

Despite adverse conditions, the Republic Iron & Steel Company's annual report for the year ending, June 30, 1909, made public during the past week makes a showing of net earnings from operation \$2,704,932, after deducting charges for maintenance and repairs, which amount to \$887,654. After the deduction of bond interest and the dividend on the preferred stock paid July 1, the surplus left for the year was \$1,221,008, which, added to the previous surplus, made the total surplus carried to the balance sheet \$5,920,520. A recapitulation of the report shows:

		Totals Inc. or Dec
Net earnings	.....\$3,592,587	* 345,927
Total profits	..... 2,769,147	* 277,472
Total deductions	... 726,322	† 88,423
Net profits	..... 2,042,825	* 365,895
Total charges	..... 413,479	* 23,821
Bal. for dividends	... 1,629,346	* 342,074
Div. on pfd.	..... 408,338	* 663,549
Surplus for year	... 1,221,008	† 331,475
Previous surplus	... 4,699,527	† 899,533
Total surplus	..... 5,920,535	† 1,221,008

* Decrease. † Increase.

The gross business shows a small increase compared with 1908. Gross sales for the last three years were: 1909, \$19,595,944; 1908, \$18,693,882; 1907, \$26,196,439.

The addition to property during the year aggregated \$307,256.

The pig iron production during the year totaled 678,779 gross tons, as compared with 494,676 tons in 1908. The production of ingots, rails, etc., totaled 910,961 tons, as compared with 645,313 in 1908.

The production of ore for the last four years has been as follows: 1909, 1,451,434 tons; 1908, 1,025,460 tons; 1907, 947,069 tons; 1906, 970,106 gross tons.

The coke production in 1909 amounted to 592,664 tons, as compared with 426,968 tons in 1908.

The executive committee in the report says: The year was not affected by serious labor troubles, but by a period of low prices and a restricted volume of business. Prices steadily declined throughout the year, with the average for May at the bottom. The general average volume of all products sold during the year approximated 62 per cent of normal. The general cost of production was the lowest for the period in the history of the company.

President T. W. Guthrie, of the Republic Company, returned during the week from a trip of inspection to the company's properties in the South. The plants there are operating virtually full, the mines having resumed, while one furnace, which is out for re-lining, is shortly to be lighted. The company is not yet ready to announce its further plans for extensions. Additional open hearth capacity is to be put in at Youngstown, although the extent of the improvement has not yet been stated. Work is being pushed on the new tube plant at Hazelton.

RESUMPTIONS BY MILLS AND FURNACES.

The Steel Corporation started idle capacity at the Edgar Thomson works at Braddock during the week just ended, and increased its operating capacity at the Gary plant. The Columbus, O., plant, the last of the idle steel mills of the Carnegie Steel Company, also will resume within 10 days after the first of the month. The American Sheet & Tin Plate Company has considerably increased its sheet and tin plate capacity, and is now operating 80 per cent of its sheet mills and 63 per cent of its tin plate mills.

Orders were issued during the week by the Carnegie Company for the resumption of the Edith blast furnace, in Woods Run, Pittsburgh. This, with the Neville Island stack, which went into blast during the week, makes the last idle stack of the Carnegie Company in Pittsburgh district operative again. Both the furnaces at Columbus will be in operation before the end of September. The Niles, O., stack of the Carnegie Company has been ordered in blast within a few days after September 1. This, with the firing of Columbus No. 1, already ordered, will leave only the Steubenville and Zanesville furnaces of the Carnegie Company out of blast.

Of the independent furnaces in the Mahoning and Shenango Valleys, the Brier Hill, which is being rebuilt, will go in sometime in September. The Mary furnace of the Ohio Iron & Steel Company, at Lowellville, which has been out for relining, will go in before September 15. The Struthers stack, of the Struthers Furnace Company will be put in blast about September 20. It also has been undergoing repairs. McKeefrey furnace, at Leetonia, will resume October 1. The Kittanning, Pa., furnace is ordered lighted August 30.

The Stuart Iron Company's Sharon furnace was blown out for repairs August 20. It will resume as soon as possible. The Clinton furnace, Pittsburgh, which has been idle 18 months, has been ordered in blast September 1.

LOCOMOTIVE PLANT FOR GARY.

The American Locomotive Company, according to a story emanating from Wall street, will use a part of a new issue of \$5,000,000 of notes in the construction of new engine works on property recently purchased by the company near Gary, Ind., which call for the expenditure of approximately \$3,000,000, while \$2,000,000 is desired for new working capital.

According to officers of the company, the new plant at Gary will be the most complete and best equipped locomotive works in the world. The site purchased

for the plant comprises 130 acres and is twice the extent of that occupied by the largest of the company's present plants. When fully occupied the new works, it is said, will give employment to from 12,000 to 15,000 workmen. At present there is no large locomotive plant in this country west of Pittsburgh.

The directors of the company met August 25 in New York and authorized an issue of \$5,000,000 5 per cent gold debenture notes as needed, some of which will be used in making the improvements at a number of the company's present plants. No mention of the contemplated plant at Gary, was made in the statement issued at the close of the meeting, which follows:

In order to take advantage of the prevailing low prices of materials and facility and economy in making improvements when the plants were not in full operation, the directors of the American Locomotive Company, with full belief in the future prosperity of the country, some time ago authorized extensive improvements in the larger works of the company at Pittsburgh, Schenectady, Dunkirk and Richmond. Plans have been prepared and contracts let for these improvements, which, it is expected, will result in a largely increased capacity and reduction in manufacturing costs.

The improvements outlined entail an expenditure of \$3,500,000, for which it will ultimately be necessary to reimburse the treasury of the company. Accordingly the directors have authorized an issue of \$5,000,000 5 per cent gold debenture notes to reimburse the treasury for the amount expended in improvements and to provide additional working capital necessary to conduct the greater volume of business made possible by the increased facilities.

SOUTHERN STEEL STOCK.

D. G. Boissevain, secretary of the reorganization committee of the Southern Steel Company, announces that certificates of stock of the Southern Iron & Steel Company will be ready for distribution on and after September 9 to the holders of certificates of stock of the Southern Steel Company on the basis of distribution provided in the plan for the depositing first mortgage bonds, collateral trust notes, creditors' claims and stock, upon presentation of the several forms of obligation to the depositaries.

NEW MILLS IN MEXICO.

The construction of the first steel plant in the south of Mexico is progressing at Corral, and the works are expected to be in working order early in 1910. The plant will cost \$2,000,000, and will have a daily capacity of 200 tons. The undertaking has French capital at its back, and the machinery will be principally of French manufacture. Excellent ore is found in large quantities within five miles of the new works.

A NEW "STEEL DRAG."

The first "steel drag" to be used on the roads of Pennsylvania, was turned out about a week ago by the Pennsylvania Steel Company, at Steelton. The drag is built exactly the same as the King split log drag, the only difference being that steel rails are used in place of a split log. The reason that steel rails have been used instead of a log is on account of the many roads and streets in the vicinity of Steelton made of cinder. The cinder, it is believed, would cut the logs and soon wear the drag out.

The roads throughout the steel company's plant are in bad condition generally, and ruts are numerous on account of the heavy hauling done throughout the works. The drag will be used after each rain and is expected to better traffic conditions all over the town. The borough will also use the drag whenever possible.

NEW OHIO POWER PLANT.

A Chicago company on August 21, awarded the contract for constructing a \$600,000 concrete dam across the Sandusky River at Ballville, near Fremont, O. An electric power plant is to be installed, and the construction of the dam, which has been awarded to Robert Lysle, of Tiffin, O., will require one year.

IRON ON FREE LIST.

By a decree of July 9 by the Government of Costa Rica, the following articles of iron and steel are exempt from the payment of import duty: Squares and double squares, angles and double angles, and other shapes to be used exclusively for frames; frames for doors, windows, and small lanterns, posts, pillars, gutters, and drainage pipes.

FOR A BY-PRODUCT PLANT.

The National Tube Company is said to be preparing to install a sulphate of iron by-product plant in connection with the galvanizing department of its plant at Lorain, O. The sulphate of iron industry was extensively exploited by the American Steel & Wire Company some years ago.

SCHWAB AND TEXAS ORE.

Advices from Dallas, Tex., under date of August 24, state that Charles M. Schwab was in Hughes Springs reported to be looking over the iron ore properties. The iron deposits in the Hughes Springs and Daingerfield districts are said to be the largest in the southwest.

OBITUARY.

DALLAS CANNON BYERS.

Dallas C. Byers, president of the A. M. Byers Company, Pittsburgh, died at Dinard, France, August 26. Death was caused by a paralytic stroke, which Mr. Byers suffered August 22, while traveling in France in hopes of benefiting his health. Mr. Byers underwent an operation at Geneva, Switzerland, last spring and his health had been failing since that time. He has been abroad for six months or more.

For some weeks he had been accompanied by his mother, Mrs. A. M. Byers and his sisters, Mrs. J. D. Lyon, both of Pittsburgh. Other surviving relatives are two brothers, E. M. and J. F. Byers, both connected with the A. M. Byers Company.

Mr. Byers was 35 years of age. He was born on the Northside and was the second son of the late A. M. Byers, whom he succeeded as president of the A. M. Byers Company. He received his early education at St. Paul's Preparatory School, Concord, N. H., and was a graduate of Yale University, class of '98. Mr. Byers was a member of the Pittsburgh, Duquesne, Allegheny Country and Pittsburgh Golf Clubs. He was on the board of directors of the Bank of Pittsburgh and the Guarantee Title & Trust Company, and was interested in various other enterprises.

RILEY MILES GILBERT.

Riley Miles Gilbert, the dominating factor in King, Gilbert & Warner, Columbus, O., for many years very successful producers of iron and steel, died Sunday, August 22, at his summer home at Bolten's Landing, Lake George, N. Y. Burial was at Woodland cemetery, New York city, August 24. Mr. Gilbert was about 60 years of age and had been retired from active work since 1891. It was his company which built up the steel works at Columbus, which are now a part of the United States Steel Corporation. These works went into one of the first combinations, the National Steel Company, of which Mr. Gilbert became vice president, serving until it was acquired by the Carnegie Steel Company. He accumulated a large fortune and was one of the powers in the steel world of the 80's and the 90's.

FRANK Q. BARSTOW.

Frank Q. Barstow, aged 63, one of the best known men in the oil trade, who had the distinction of having fought John D. Rockefeller to a standstill in a trade war, died August 20, on a train in Utica, N. Y., from a valvular disease of the heart. He and his wife were on their way from the Thousand Islands to their

home in East Orange, N. J. Mr. Barstow was interested in many large manufacturing and commercial concerns, holding directorships in the Railway Steel Spring Company, Thompson-Starrett Company, Hegeman Company, Corn Products, Union Trunk Line and American La France Engine Company. He was president of the Barstow Mining & Milling Company, of Ouray, Col.

Mr. Barstow went into the oil business when a boy. He was born in Waukesha, Wis., October 24, 1847. He became a clerk for the Acme Oil Company in Titusville, Pa. As the concern grew he was rapidly advanced until finally, just about the time the war between the Standard and other companies began to assume big proportions, he was the vice president. In that capacity he led his concern to successful battle with the Rockefeller forces. Mr. Barstow afterward became a director of Standard Oil and one of its executive committee.

THOMAS TURNER.

A well known figure in the British iron and steel world, Thomas Turner, managing director of Andrew Barclay, Sons, & Company, limited, Kilmarnock, died recently, aged 53. In earlier years he held an engineering appointment in India, and did work in technical journalism. During his varied career he was successively steel-works manager to Joseph Fenton & Sons, of Sheffield; Nicholson & Wilson, of Blaydon-on-Tyne; works manager to the New British Iron Company, Congreaves, and works manager to the Shelton Iron & Steel Company, of Stoke-on-Trent.

EDWARD KAYE.

Edward Kaye, general manager of the Phoenix glass works, at Monaca, Pa., is dead at his home in Rochester. He was born in Pittsburgh, 55 years ago, but had spent most of his life in the Beaver valley. Mr. Kaye was president of the Beaver Valley Clay Pot Company of Rochester, and was a director in several banking and industrial institutions. A widow and two sons survive.

PERSONALS.

William Henry Singer, of Pittsburgh, one of the founders of the old firm of Singer, Nimick & Company, and a director in the Carnegie Steel Company and Crucible Steel, was caught in an automobile wreck at his summer home at Watch Hill, L. I., August 25 and seriously hurt. He was pinned under the car, had several ribs broken, and was badly cut about the face.

L. A. Green Company, 419-420 Park building, Pittsburgh, dealer in new and relaying rails, machinery, etc., has se-

cured the agency for the Ernst Wiener Company, New York, and will handle its line of industrial cars, portable equipment, rails, etc., in Western Pennsylvania and all of Ohio, West Virginia and Kentucky.

W. B. Graham, salesman with the Carnegie Steel Company's office, will become connected with the United States Steel Exports Company, New York city, September 1 and will be in charge of the exports of the Lorain Steel Company, of which company he was the Cleveland representative for a number of years.

The Allis-Chalmers Company, of Milwaukee, has entered the field as manufacturers of machinery for sand lime brick and has employed as commercial engineer, Franklin Henshaw, an engineer, of wide experience in this line and formerly associated with the International Sand-Lime Brick Company, of New York City.

E. W. Acker, until recently connected with the Brown Hoisting Machinery Company, Cleveland, is now employed by the Liggett Spring & Manufacturing Company, whose works are at Axleton, near Monongahela, Pa., as engineer, his work dealing more directly with chemistry and metallurgy.

Robert F. McKenna, master car builder of the Lackawanna, at Scranton, Pa., has resigned, effective September 1, and will retire entirely from railroad life. His plans for the future has not been decided. Mr. McKenna has grown up in the service of the Lackawanna.

Edward E. Klooz, who has been the superintendent of the Brier Hill (O.), Iron & Coal Company's cement plant for 11 years, will on September 1 take the management of the Portage Silica Company's plant, Mahoning, O.

Charles M. Power, secretary and general manager of the Seneca Chain Company, Kent, O., has resigned and has become associated with the Standard Chain Company, as general sales agent with headquarters at Pittsburgh.

Frederick E. Town has been made manager of the Pittsburgh office of the Otis Elevator Company. He was formerly assistant sales manager of the company.

Press reports from Chicago say that subway plans assumed a definite aspect when G. W. Jackson, head of George W. Jackson, incorporated, announced that he was prepared to build a system to cost upwards of \$80,000,000 for street cars and other public utilities. The Jackson outline contemplates a system independent of the present lines.

REVIEW OF TRADE CATALOGS.

The United Engineering & Foundry Company, Pittsburgh, has issued an illustrated catalog describing the high speed steam-hydraulic forging presses manufactured by the company under the patents of the Davy Brothers, limited. The machines are built for all classes of forging, pressing or shearing, and range in size from 100 to 12,000 tons capacity. The single frame type is built in sizes from 100 to 400 tons capacity with a speed of 200 short strokes per minute. Larger sizes from 300 to 2,000 tons capacity are of the four-column type with single cylinder. Two-cylinder presses are built with capacity of 1,500 to 12,000 tons, with hydraulic die changing apparatus and a speed of 60 strokes per minute. The operation of the press is controlled by a single lever. There are two kinds of operations, that of working with short strokes for quick forging, and that of having the press make long strokes, which can be increased up to the maximum stroke of the main cylinder; both kinds of movement may follow each other instantaneously. The lever can be moved by the operator without noticeable effort and its movements are faithfully followed by corresponding movements of the presshead of the press. Claims made for the press are: Double the production of steam hammers of the same capacity; a more effective stroke; more accurate work and working the metal through its entire section with half the steam consumption.

The first of a series of articles on "Foundry Troubles" begins in the September issue of the Obermayer Bulletin published by the S. Obermayer Company, Cincinnati, O. The series is from the pen of R. H. McDowell, one of the most practical foundrymen in this country, and he addresses himself to foundrymen who are having trouble with dead, dirty, hard iron, large breakage and heavy losses in general, cupola melting slow and hanging when bottom is dropped, often the last charge or so not melting at all, etc. This series of articles will run in the Obermayer Bulletin for some months to come. The Obermayer Bulletin of Foundry Information can be secured regularly free of charge, by addressing the Obermayer Company, Cincinnati, O.

Bulletin No. 29 has been issued by the University of Illinois, Urbana, Ill., giving a description of tests of reinforced concrete beams, prepared by Arthur N. Talbot, professor of municipal and sanitary engineering and in charge of theoretical and applied mechanics. The tests were made with a view of obtaining further information on web stresses and on the part taken by concrete, bent rein-

forcement, beams with reinforcing bars bent in various ways along the outer thirds of their length, and beams with vertical U-shaped stirrups. Illustrations, tables and results obtained are given of the various tests made.

The H. W. Johns-Manville Company, New York, has issued a folder describing asbestoside, a fireproof, weatherproof siding and roofing which does not require painting, and is especially adapted to mill and factory buildings. The company also manufactures brickline, an asbestos firebrick cement used in furnace lining, fire-box bridge walls and other places where intense heat is required.

The Chicago Pneumatic Tool Company, Chicago, has issued a bulletin describing its line of electric tools, including electric drills, wound 110 or 200 volt direct or alternating current, with one, two or three motors, and ranging in size for drills from $\frac{3}{8}$ to $1\frac{1}{4}$ inches; Duntley electric grinders and Duntley portable electric moists.

The American Tap & Die Company, Greenfield, Mass., has issued catalog No. 3 illustrated with cuts of the taps, dies, screw-plates and other appliances manufactured by the company. The catalog also contains tables of standard dimensions of wrought iron welded tubes, forms of thread, tables of decimals and other information for machinists.

FIRES AT INDUSTRIAL PLANTS.

Wellsville, O. — Menough Brothers, foundry adjoining the Pennsylvania Railroad shops, partially destroyed August 25; \$10,000 damage. The pattern department of the foundry is gone, a probable loss of \$5,000.

Wilkes-Barre, Pa. — Hillside shaft of the Hillside Coal & Iron Company, at Dupont, with head boiler and fan houses destroyed August 24. Loss \$60,000.

Bluefield, W. Va. — Warerooms of Standard Oil Company and buildings of Standard Fuel & Supply Company, destroyed August 18. Loss, \$50,000.

Newark, N. J. — Trunk and bag factory of M. Naidis, at E. Seventh and Summer avenues, destroyed August 17. Loss \$6,000.

Cookesville, Tenn. — Plant of Cookeville Colonial Column Company, destroyed August 12. Loss \$7,000.

Cleveland, O. — Stock of Riverside Foundry Company, No. 2021 Carter Road damaged \$3,000, August 19.

Oldtown, Ind. — Engine house of

Culph Lumber Company, destroyed August 23. Loss \$10,000.

Menominee, Mich. — Marks shingle mill destroyed August 21. Sparks from smokestack. Loss \$10,000.

Alton, Ill. — Fire at Federal Lead Company's plant, August 11, compelled shut-down of furnaces.

Latrobe, Pa. — Peters Paper Company, Kingston, Pa., stock and machinery destroyed; \$20,000.

Marshalltown, Iowa — Loss on Iowa Central round house August 18, damage \$15,000.

LABOR COSTS AND THE MECHANICAL STOKER.

"The direct saving gained by stoker operation over hand-firing is due to two things," states Harold V. Goss in his article on "Smoke Prevention," in the "Engineering Magazine," (August), "namely: saving of fuel due to better combustion, higher boiler efficiencies and smokeless operation, and saving due to decreased labor attendance. This is not so apparent or so great in plants whose boiler capacity is about 1,000 to 2,000 horsepower. The cost of boiler-room labor, averaged from plants containing 600 boilers in all, was 50 cents per ton of coal fired, ranging from 26 cents to 75 cents. The cost gradually decreases as the size of the plant increases, becoming, however, per ton of coal fired, nearly stationary when firing 1,200 tons per week. There is also a correction to be made, depending upon the load factor, the cost of labor per ton being about 10 per cent less for a steady load than for a variable load.

"Mechanical stokers save from 30 to 40 per cent of labor in very large plants (over 200 tons per week); 20 to 30 per cent in medium-large size plants 50-150 tons per week), and no labor in small plants. Similarly they cut down the time of cleaning fires to about a tenth of that of hand-firing, and in some types of stoker the labor and time for cleaning fires is reduced to a minimum."

COTTON SEED AS FUEL.

Cotton seed probably will be added to the present sources from which fuel can be obtained for use by the internal combustion engine, if promises obtained in important experiments being made in some of the British possessions in Africa by the British Cotton Growing Association are fulfilled.

American Consul Frederick Bright, of Huddersfield, England, has reported these experiments to the State Department for the benefit of American commercial interests.

Mesta Machine Company Now Building Air Compressors

The Mesta Machine Company, Pittsburgh, Pa., has established a new department for the construction of heavy-duty machinery for mines, and is now building two large air-compressors for the Pittsburgh-Buffalo Company, which are to be located at the Marianna mines of that company.

The illustration herewith shows one of these compressors as it appeared erected on the shop-floor prior to shipment. It is a cross-compound two-stage compressor, with a capacity of 3,600 cubic feet of free air per minute, delivered at 100 pounds per square inch above atmosphere when running 75 R. P. M.

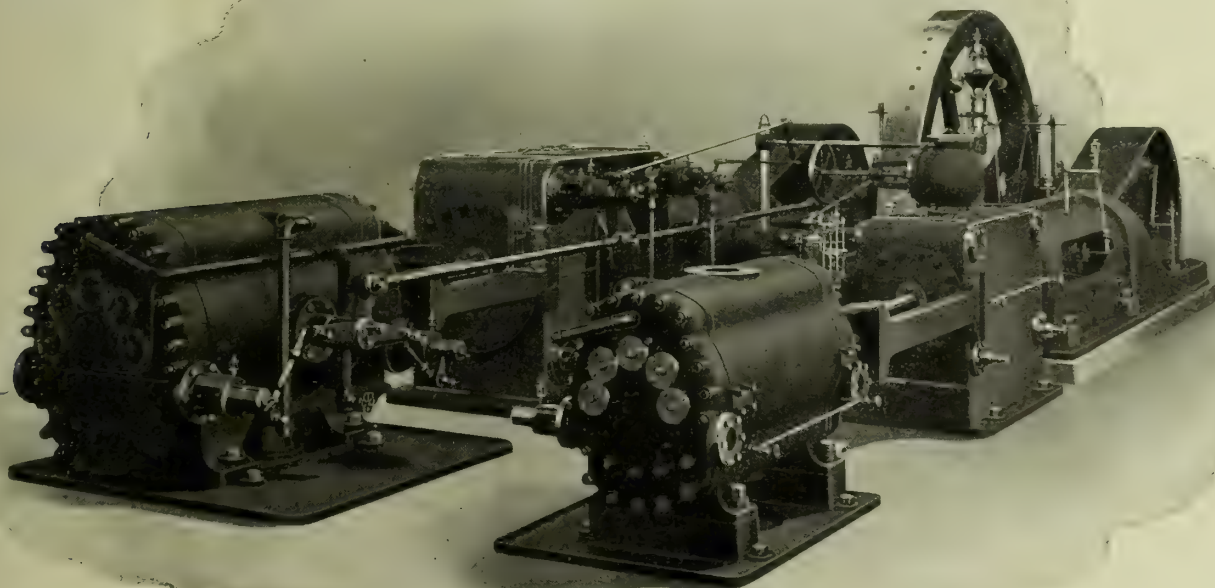
The compressor is of the rotative-crank and fly-wheel type, with air cylinders connected in tandem to the rear end of the steam cylinders. The steam

sign, and are practically noiseless in operation. All valves are located in the cylinder-heads, which reduces the clearance to a minimum.

The cylinder and cylinder heads are water-jacketed in a highly efficient manner. A large inter-cooler is also provided between the first and second stage on the compressor. It is located below the floor-line, which makes it possible to keep all piping, with the exception of the discharge from the high pressure-cylinder, also below the floor line, a feature which will add much to the trim and tidy appearance of the machine in the powerhouse. It is also preferable to have the inter-cooler below the floor on account of condensation on the surface, which is continually dripping on the machine in case the inter-cooler is placed overhead. Special attention has

with the engine-governor, will vary the speed of the machine to suit demands for air, and is calculated to keep the air-pressure within one per cent of normal.

The Mesta Machine Company has entered this field, believing there will be a demand for heavy-duty machines of this and other kinds manufactured by it. It is its intention to build the larger sizes and for very heavy duty only. It now has in operation at the Marianna mines a 26-inch by 48-inch heavy-duty simple Corliss-engine, direct-connected to a 500 K. W. generator. This engine has been in operation for about eight months, and has worked so satisfactorily under the variable conditions of load existing in coal mine operation that it has induced the Pittsburgh-Buffalo Company to place the order with the



Mesta 100-Ton Air Compressor.

end is of the cross-compound Corliss type, with high-pressure cylinder 22 inches in diameter, and low-pressure cylinder 36 inches in diameter, and 48-inch stroke. The low-pressure air cylinder is 48 inches in diameter and the high-pressure 20 inches in diameter. The machine is built along the lines of the heavy-duty rolling-mill engines built by the same company, and its total shipping weight is 200,000 pounds.

The compressor valve-gear consists of semi-rotary inlet valves, positively driven from an eccentric on the main shaft and automatic poppet outlet valves. The latter are of a new and improved de-

been paid to this inter-cooler by providing means for passing the cooling-water in a comparatively thin film along the walls of the pipes, an arrangement by which it is expected to reduce the quantity of cooling-water used to about one-half to one-third of the amount necessary in an intercooler with plain pipes.

A pressure-regulator is attached to the main engine-governor, which operates a floating lever. The air pressure acts on a plunger, which is held down by means of a weight and spring. The plunger is ground-fit in a cylinder, and no packing of any kind is used.

The pressure-regulator, in connection

Mesta company for the above-mentioned compressor, also for a large first-motion hoisting engine, although both of these machines are a new departure in the line of manufacturing by the latter company.

The hoisting engine is a 36-inch by 60-inch twin, with conical drums, and is expected to be put in operation by November 1.

The placing of these machines on the strength of the performance of the one machine already in operation, speaks well for the Mesta Machine Company's products.

Corporations to Which Charters Have Been Granted Recently

PENNSYLVANIA.

Middletown Car Company. Capital stock \$5,000. Treasurer: Alexander Black, 408 Graham street, Pittsburgh. Directors: Ralph Longenecker, Alexander Black, William K. Johnson, all of Pittsburgh.

Rococo Boiler Company, \$100,000. Treasurer: C. F. Thayer, Erie, Pa. Directors: C. F. Thayer, G. J. Schnaal, F. B. Downing, B. A. Walker, J. N. Thayer, H. N. Thayer, all of Erie, Pa.; E. M. Fancher, Chicago, Ill.

Erie Iron & Steel Company, \$30,000. Treasurer: I. H. Emerman, 121 West Thirtieth street, Erie, Pa. Directors: B. A. Zacks, Henry Zacks, J. H. Zacks, I. H. Emerman, all of Erie; B. Emerman, Cleveland, O.

Pittsburgh Hydro-Electric Company, \$5,000. Treasurer: Frederick W. Schneidenhelm, Connellsville, Pa. Directors: Frederick W. Schneidenhelm, V. F. Hammel, both of Connellsville, Pa.; Ross M. Reigel, of Harrisburg.

Atlas Portland Cement Company. Increase \$10,000,000 to \$12,500,000.

Seaman-Sleeth Company. Increase \$600,000 to \$750,000.

West Wyoming Coal Company. Increase \$5,000 to \$50,000.

OHIO.

Ohio State Boiler Company, Lorain, by Harry L. Warden, Henry Baxter, F. A. Burgett, John Schoenberger and Edward V. Hug; capital, \$25,000.

Pando Coal Company, Cleveland. Increase of capital from \$125,000 to \$250,000.

Bellaire Tumbler Company, Bellaire; H. E. Turney, Charles Conaway, J. H. Lovejoy, John Athey and Harry W. Turney; capital, \$20,000.

Mahoning Sand & Stone Company, Youngstown, \$10,000; David Todd, French F. Clingan, G. M. Booth, Jacob Stambaugh and S. B. Miller.

The Domestic Coal Company, Cambridge; Mark Snyder, Henry Little, J. R. McBurney, E. M. Johnson and C. A. Moore; capital, \$15,000.

The Cincinnati Pump Company, Cincinnati; Edward J. Brigel, Phyllis Brigel, Anthony B. Dunlap, Leo A. Brigel and Nellie C. Brigel; capital, \$50,000.

Metal Specialty Company, Cincinnati; Joseph J. Smith, Benjamin I. Kaufman, Isaac Kaufman, Joseph Brauer, Stanley Klein; capital, \$10,000.

Defiance Tile Company, Defiance; Hugh G. Monen, Lillie Monen, K. C. Thompson, G. De Veaux, Robert Newbegin; capital, \$10,000.

ILLINOIS.

Chicago & Southern Coal Company, Chicago; \$10,000; deal in coal and operate coal mines. Albert R. Gates, Henry W. Leman, Frank H. Culver.

Culter Manufacturing Company, Peoria; \$10,000; dealing in and manufacturing agricultural implements. Frank M. Nichols, Ralph S. Nichols, Horace G. Culter.

Victor Wind Shield Manufacturing Company, Chicago; manufacturing automobile accessories; capital, \$2,500.

Gorham & Wales, New York Life building, Chicago, Ill.

Emerson Carriage Company, Rockford; \$50,000; manufacturing vehicles. C. S. Brantingham, E. P. Lathrop, Robert Lathrop.

Mutual Electrical Supply Company, Chicago; \$2,500; manufacturing electrical supplies. Halsey D. Payne, Harry G. Seaber, Frederick H. Rix.

Osburn Electric Company, Chicago; general manufacturing; capital, \$100,000. Jones, Addington & Ames, No. 134 Monroe street, Chicago, Ill.

Stimple Manufacturing Company, Geneva; manufacturing agricultural implements and specialties; capital, \$15,000. Arthur E. Stimple, Geneva, Ill.

Newall Manufacturing Company, Chicago; manufacturing tools and metal articles; capital, \$25,000. E. D. Clapp, No. 1540 First National Bank building, Chicago, Ill.

Chicago Automobile Self-Starting Appliance Company, Chicago; manufacturing automobiles and appliances; capital, \$70,000. Edward J. Kelley, No. 1005 Unity building, Chicago, Ill.

Cross-Conklin Company, Chicago; metal manufacturing; capital, \$10,000. Gann & Peaks, No. 181 La Salle street, Chicago, Ill.

Houston Manufacturing Company, Rockford; manufacture machinery; capital, \$10,000. E. P. Lathrop, Rockford, Ill.

NEW JERSEY.

Harbor Dredging & Scow Construction Company, No. 229 Broadway, Bayonne, N. J.; construct, operate and lease scows, etc.; capital, \$100. Incorporators: Garrett V. Mitchell, No. 67 West Thirty-third street; Sherman S. Mitchell, No. 87 West Thirty-fourth street; Charles T. Kavanagh, No. 15 East Thirty-ninth street, all of Bayonne, N. J.

New Jersey Carburettor Company, Jersey City; to manufacture steel and iron; capital, \$25,000. Incorporators: Charles R. Nutter, F. L. Houghtaling, Charles F. Zissel, Jr., Jersey City.

American Steel Company, Trenton; to manufacture iron and steel; capital, \$3,000. Incorporators: J. B. Hartpence and J. A. Hartpence, No. 1105 North Olden avenue; Edmund R. Nutt, No. 79 Spring street, Trenton.

Dexter-Chapman Engineering Company, Arlington; contractors and engineers; capital, \$25,000. Incorporators: Eliot Norton and Alexander H. Jackson, No. 2 Rector street, New York; J. L. McCord, as above.

The Slate Products Company of America, Phillipsburg, N. J.; quarrying, etc.; capital, \$250,000. Incorporators: George A. Flora, Bangor, Pa.; A. J. Ellenberg, Easton, Pa.; H. M. Eilenberg, Phillipsburg, N. J.

The New Jersey Culm Furnace Company, No. 702 North Ninth street, Camden, N. J.; build and construct furnaces of all kinds; capital, \$100,000. Incorporators: Morris Odell, No. 445 Haddon avenue; Lewis H. Leigh, No. 418 Broadway; Thomas Littlehales, No. 568 Benson street; James H. Long, No. 702 N. Fourth street; Thomas Gordon Coulter.

No. 522 Pennsylvania street, all of Camden, N. J.

Keller-McManus Company, No. 304 Market street, Camden, N. J.; manufacturing portable or stationary, vacuum dry cleaning machines, etc.; capital, \$50,000. Incorporators: S. Moor, W. R. Watson and Frank A. Kuntz, all as above.

Pacific Coal Company, No. 15 Exchange Place, Jersey City; develop coal mines, lands, properties, wood lands, etc.; capital, \$125,000. Incorporators: Richard F. Tully, No. 15 Exchange Place, Jersey City; William Wickham Hoffman, No. 58 East Seventy-ninth street; Max Tachna, No. 62 West One Hundred Fifteenth street, both of New York.

MASSACHUSETTS.

Eastern Rag & Metal Company, Boston; general junk; capital, \$10,000. President, Walter J. Feinberg, and clerk, Philip Schochter, No. 338 Spruce street; treasurer, Etta Feinberg, No. 16 Labbert avenue, all of Chelsea.

Luce Manufacturing Company, Dalton; manufacturing and sale of machinery; capital, \$20,000. President, Thomas C. Luce, and treasurer, Frank W. Strong, both of Dalton; clerk, John B. Woodburn, Pittsfield.

INDIANA.

Hill-Tripp Pump Company, Anderson; capital stock, \$50,000; manufacturers. Directors: A. E. Tripp, Hugh Hill, Forrest Hill, Horace C. Stilwell and T. N. Stilwell.

Southwestern Granite Company, Michigan City; capital stock, \$50,000; to develop stone quarries. Directors: G. S. Van Deusen, C. E. Arnt, H. W. Wilson, I. L. Jones and Schuyler Powell.

GEORGIA.

Cartgo Foundry Company, Cartersville; capital, \$12,000; to establish plant to manufacture stoves, ranges and hollowware, for general foundry repairing and probably machine work. J. W. Vaughan, president; J. W. Knight, vice president; W. A. Smith, general manager and treasurer; Watt H. Milner, secretary.

DELAWARE.

Republic Register Company, of Pittsburgh; to manufacture registers for the registry of fares, etc.; \$150,000. Carl C. Conkle, J. B. Anderson, Pittsburgh; Martin E. Smith, Wilmington, Del.

Robinson Auto & Supply Company, of St. Joseph; capital, \$10,000. Incorporators: W. H. Robinson, E. A. King, R. R. Calkins and others.

Keystone Engine & Manufacturing Company, Dallastown, Pa.; to manufacture engines. Incorporators: John J. Taylor, Martin Simon, Dallastown, Pa., and John M. Frere, of Wilmington, Del. Capital stock, \$100,000.

The American Crossing Rail Company, Lawyers Title & Trust Company; capital, \$350,000. Incorporators, William F. Blanks, Arthur Hosmer, both of Chicago, Ill.; James D. Collet, Forth Worth, Tex.

Delaware Railroad Construction Company, James Lord, Dover, Del.; capital.

\$100,000. Incorporators, James Lord, Dover, Del.; David E. Ratter and William S. Allen, Philadelphia, Pa.

National Battery Fan Company, Capital Trust Company of Delaware; capital, \$600,000. Incorporators, William I. N. Lofland, William F. P. Lofland and Samuel C. Y. Ware, all of Dover Del.

WEST VIRGINIA.

Pocahontas Smokeless Coal Company, Welch. Capital, \$50,000. Incorporators: W. E. Deegans, of Glen Jean; P. E. Gallagher, of St. Albens, O.; O. C. Huffman, of Welch; J. G. Vaughn, of Charleston, and John B. Hoffman, of Parkersburg.

Euclid Water Filter Company, Sisterville; to operate a general machine shop for the manufacture of plumbing material and water filters. Capital stock, \$30,000, of which \$2,920 has been subscribed and \$421.74 paid. Incorporators: W. J. Brown, S. W. Lawrence, L. C. Hartsough, George Hill, Edward Roome, C. A. King and Jacob Schlemmer, all of Sisterville.

The Lesser Manufacturing Company, of Warren, Pa; to deal in oil and oil products; \$10,000. Incorporators: F. R. Mount, G. W. Baird, J. T. Austin, G. A. Lesser and J. W. Elliott, all of Warren, Pa.

KENTUCKY.

Home Electric Light Company, Corbin; capital stock, \$15,000. Incorporators: Jesse C. Mereshon, Eliza Mereshon, William G. Mereshon, Joseph C. Mayner and Louis D. Hocker.

ALABAMA.

Handley McCartney Boiler Company, Bessemer, Ala., incorporated with \$50,000 capital stock by J. J. Pilgrim and James McCartney, both of Mobile, and G. H. Stevenson, Bessemer, Ala. Company can be addressed care of G. H. Stevenson, 324½ Nineteenth street, Bessemer.

CANADA.

Ornamental Galvanized Iron Manufacturing Company; capital, \$50,000; head office, Toronto. Charles Washington, director.

George A. Fuller Company; capital, \$100,000; head office, Montreal; general contracting. A. Reginald Chipman, Montreal, director.

Black Lake Consolidated Asbestos Company; capital, \$4,000,000; head office, Montreal. R. A. E. Greenshields, K. C., solicitor.

Dominion Electric Company; capital, \$40,000; head office, Ottawa; T. A. Low, Renfrew, Ont., director.

NEW CONSTRUCTION.

Greensburg, Pa. — The steel work is about finished on the new plant of W. F. Overly, to manufacture skylights and cornices. It will be of brick and steel structure, two stories high, 105x140 feet.

Cleveland, O. — Bishop & Babcock Company has commissioned the Osborn Engineering Company, Osborn building, to prepare plans for a brick and steel factory building, five stories high, 55x335 feet.

The Forest City Engineering Company, Superior building, has awarded to the Griffin Waterson Construction Company, contract to build a brick and steel factory building, for Mather & Wachter, 224 High avenue, S. E.

Jennette, Pa. — Work has been started on the remodeling of a factory build-

ing for the Northwestern Expanded Metal Company, with headquarters at 1825 Van Buren street, Chicago.

Grove City, Pa. — The Hindman-Henderson Company, 245 Fourth avenue, Pittsburgh, has completed foundations for a one-story machine shop addition, 78x353 feet, for the Bessemer Gas Engine Company.

New Brighton, Pa. — William E. Leard, will construct a brick and concrete machine shop and foundry building from private plans.

Cleveland, O. — Plans have been prepared by the Osborn Engineering Company, Osborn building, for a brick reinforced concrete factory addition, 35x150 feet, three stories high, for the Cleveland Tanning Company.

Johnstown, Pa. — The general contract for the erection of a brick and steel factory addition to the plant of the Century Stove & Manufacturing Company, has been awarded to Joseph Leventry and John C. Hartley. The buildings will be brick and steel two stories high, one measuring 50x180 feet and the other 40x36 feet.

THE AVAILABILITY OF ZINC FOR ROOFING.

Again an inquiry is made by a large manufacturer looking for a roof covering material for his factory to learn why zinc is not widely used for roofing. The inquiry is accompanied with the statement that in New England a building erected in 1826 was covered with zinc. This roof, it is stated, never caused any trouble until 1873, when it was necessary to repair some leaks. After these leaks were repaired the roof continued to render good service until 1896, when the building was torn down. With this record of service in the New England climate it is not strange that some explanation is sought as to why zinc is not largely used for roofing purposes in the United States.

A New England sheet metal worker to whom the question was put commenced to make investigations, and found that as a rule where zinc was used in the United States for flashings or some portion of the outdoor work in connection with tin plate or sheet iron it was due to the fact that the architect who specified it had been traveling abroad and was familiar with the use of zinc on the other side of the ocean. This practice has not been sufficient to bring zinc into common use for outdoor sheet metal work. In the endeavor to find something as to the cause for this situation it was found that little effort has been expended by the manufacturers of zinc or spelter to enlarge the output in sheets and to find a market for it among the architectural sheet metal workers and roofers. It was also found that owing to the softness of the metal a razorlike burr was formed when it was cut with ordinary shears which damaged the clothes and flesh of the workmen, and when the

flesh was cut seemed to have a poisonous effect, so that it was not popular with the workmen. In the cases where it was used for flashing and a fire had occurred, the zinc melted down and did not afford the protection that attended the use of tin plate, sheet iron or copper.

RODS FROM MOLTEN STEEL.

Adam H. Pherson, of Centralpalatset, Stockholm, Sweden, has recently obtained letters patent in the United States on an improved method of producing rods, tubes, wire, etc., direct from molten metal. The method consists in giving the rod or the nozzle or both of them such a relative motion that the parts of them which are in contact are changing all the time, or in other words that the above mentioned insulating spec, caused by shrinking of the rod, changes position continually so that its hurtful action will be decreased and the cooling effect of the nozzle will be better, and a continuous formation of rod from the molten metal will therefore be possible. It is of course also necessary that these surface contacts are sufficiently large to cause efficient cooling. The manner of motion of the rod or the nozzle may vary, for instance a lengthwise vibratory motion may be used, or a lengthwise sliding motion, or one may turn around or roll upon the other, or have a gyratory or swinging motion in relation thereto, so that the contact surface between them is changed. A combination of one or several of such motions may of course, also be used.

This method of producing bars, rods, pipes, wires, etc., directly from molten metal, consists in passing the molten metal through a cooled nozzle, and simultaneously giving to the nozzle, and to the passing metal rod or tube such a movement relative to each other that the insulating space caused by shrinking of the rod when solidifying will continually change position, in order to cause different parts of the inside surface of the nozzle to successively make contact with different parts of the metal passing through the nozzle, so that the cooling action of the nozzle will be increased, and a continuous formation of rod will be possible.

DINKEY INSPECTS PLANT.

President A. C. Dinkey, of the Carnegie Steel Company, inspected the Homestead steel works, on August 26. The inspection is understood to be preliminary to improvements which will include the enlargement of the experimental plant for the manufacture of the new Slick car wheel. Several additional open hearth furnaces are projected for Homestead.

Core Loss Voltmeter for Transformers

An instrument which makes possible the accurate measurement of the core loss of distributing and power transformers, regardless of wave form distortion or frequency variation, should be a valuable adjunct to a central station's testing department. Such an instrument is the core loss voltmeter manufactured by the Westinghouse Electric & Manufacturing Company.

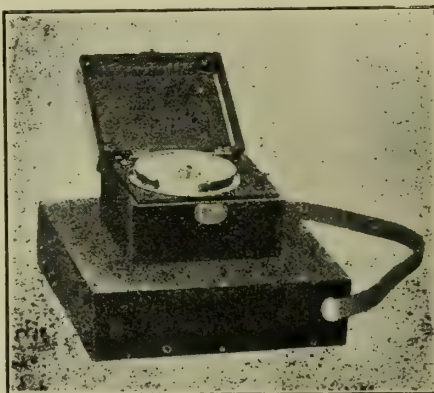
The correct measurement of transformer losses is perhaps the most difficult and yet the most important test which the central station has to perform. The inaccuracies in such tests result from many causes, such as frequency, temperature and wave form variations, inaccurate wattmeters on low power factors, wrong meter connections, etc. Of all these the wave form variations are the most devious; are almost always present on ordinary commercial circuits and are the most difficult to make corrections for readings taken on ordinary instruments. A peaked voltage wave will cause a lower core loss and a flat wave a higher core loss than a sine wave of the same effective voltage. These variations from a true sine wave may be due to the design of the alternating current generators or to abnormal load conditions and voltage drop in the circuit. Such voltage distortions are generally due to high inductance and resistance in the circuit such as the alternator armature, coils of measuring instruments, and the rheostats and choke coils which are often used to regulate the voltage.

Since guarantees of transformer core losses are generally based on a sine wave of electromotive force, it is necessary that some method be employed to secure a sine wave shape or its equivalent, when testing transformers for the performance guaranteed. The equivalent loss due to a sine voltage wave at a normal frequency of, say, 60 cycles, can be secured under normal conditions of wave form and frequency by either lowering or raising the voltage. What is needed, then, is an indicator which will enable a voltage adjustment to be made to give a core loss equivalent to that produced by a sine wave at normal frequency and voltage. To render such an adjustment possible the core loss voltmeter has been designed.

This meter consists essentially of a ring or core of laminated steel excited by a winding, and a wattmeter of suitable design on which to read the power input to the ring and all copper circuits in the instrument. The core and meter are mounted in suitable cases, as shown

in the illustration, and the whole instrument is entirely self-contained and portable. All connections are made inside the instrument and there are but two terminal posts to which line connections are made.

On the laminated core is placed a winding, the core and winding being mounted in the lower case with the two leads of the winding brought through the top and into the instrument cases which contains the meter movement. A stationary current coil is connected in series with the winding. The shunt circuit consists of a moving coil, a non-inductive resistance and a compensating coil all in series across the instrument terminals. The compensating coil is wound parallel to the stationary current coil and has the same number of turns.



Portable Core Loss Voltmeter, Westinghouse Company.

The instrument is calibrated in parallel with an alternating-current voltmeter on a pure sine-voltage-wave of the required frequency from a small smooth-core alternator and the scale is drawn in to agree with the alternating current instrument. Two scales are provided—one reading watts input of the instrument itself and the other volts.

In application the core loss voltmeter is connected across the terminals of the transformer under test, in the same manner as an ordinary voltmeter. A wattmeter is also connected in the circuit in such a way as to measure total input of both transformer and core voltmeter. The voltage of the circuit is then adjusted by any convenient means until the voltmeter reading is the same as the normal voltage of the transformer. The total power input is then read on the wattmeter and the watt input of the instrument read on the watt-scale of the core loss voltmeter, the difference being the core loss of the transformer.

The core loss voltmeter may be used as a portable voltmeter in testing transformer core losses on any reasonably distorted wave of voltage and without any knowledge of the wave form. The voltage regulation may be secured by the aid of resistance or reactance thus dispensing with the usual multi-voltage transformer and avoiding the inconvenience of varying the field current of the generator. The frequency need only approximate the normal value. The final result of core loss as measured on the wattmeter will be the same value as that which would be obtained on a sine voltage-wave at the normal voltage and frequency of the transformer.

There are many advantages which will result from the use of the core loss voltmeter. Chief among these is the comparative simplicity in testing equipment since very little apparatus is required and no oscillograph is needed to determine the form factor. Another advantage is that transformers need not be tested at the source of power. This is a great convenience when it is desired to measure the core loss in lowering transformers in substations where close voltage regulation except by auxiliary apparatus is difficult to obtain. Competitive tests are also very much simplified when the core loss voltmeter is used because there is no need of having similar conditions of wave form, frequency, etc., for each transformer tested.

The illustration shows the core loss voltmeter as at present constructed. A new style of instrument is being made up which is more compact than the one shown. This new design will have the meter element mounted in the center of the core instead of above it. A line of double scale voltmeters is also being manufactured which combines in one instrument the advantages of a high and low reading voltmeter.

RECORD ORE TRIP.

Lake Shore locomotive 4598 established a new high record for ore tonnage for a single trip August 24, hauling 100 steel cars loaded with 7,433 tons of iron ore from Ashtabula Harbor to Youngstown in five hours and 15 minutes. The distance is 65 miles. What makes the time all the more remarkable is the fact that the train operated over a single track most of the way.

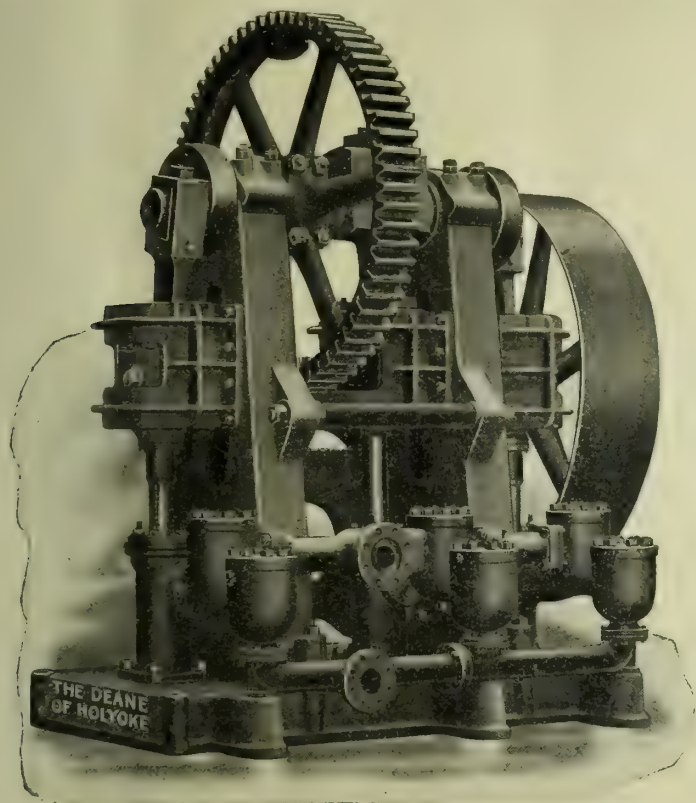
The engine which made this record is one of the mammoth freight leviathans of the J. & F. division which haul the heavy trains of ore between Ashtabula and the Youngstown furnace district. The achievement surpassed that made recently on the Pennsylvania division of the New York Central. The time of the run from Ashtabula to Youngstown was much better than that on the Pennsylvania division.

Pumping Machinery in Oil Transport

Widely separated oil fields present new problems to mechanical engineers in the transportation of oil from the fields to the refineries or seaboard.

It has been but a few years since all

caused to rotate rapidly by a series of long spiral grooves or rifling in this line. The water being heavier than the oil is thrown out against the pipe and there held by centrifugal force and the oil is



Vertical Triplex Power Pumps for Oil Gathering Stations.

of the crude oil was transported by rail; first in barrels, later in tank cars, but at the present time practically all of the crude oil finds its way to the market through the numerous oil pipe lines

consequently transported through an enveloping sheath of water at an enormous decrease in expenditure of energy necessary to force the oil through the pipe. The friction of water in the line being

internal combustion engines to the transportation of oil. Pump manufacturers have kept pace with the development of the oil transporting industry from the beginning. The oil was forced through the original pipe lines by massive and usually inefficient steam-driven direct-acting pumping engines, but at the present time this type of machine is being very little used, all of the later installations being of the triplex power type operated by internal combustion engines using oil or gas.

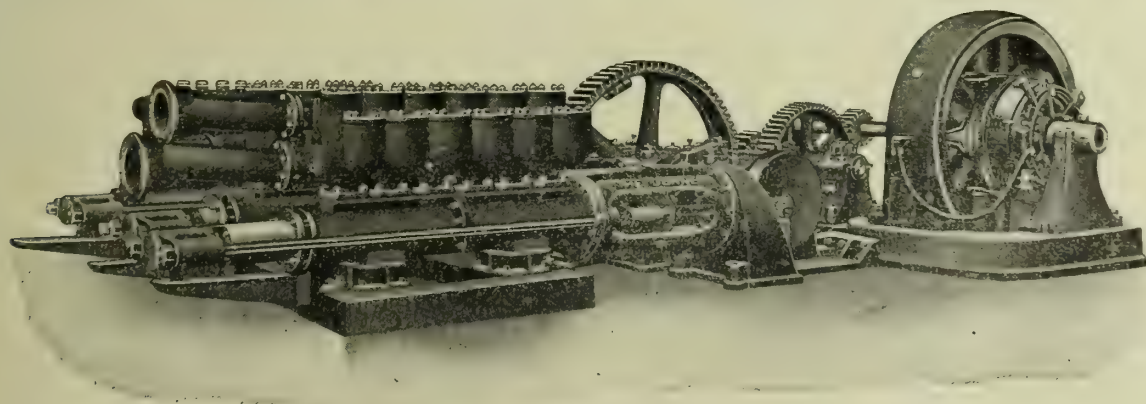
The photographs illustrating this article show two of the types of oil pumps which have recently been installed for this service. The first photograph shows a vertical triplex power pump for gathering stations, and the second a large pump for regular oil line service.

Both of these machines are built to operate continuously against pressures up to 1,000 pounds per square inch. All parts are of massive construction and of utmost rigidity. All oil end parts are of steel castings. The valve areas are very large and the openings through the pump are of large area, short and direct.

The Deane Steam Pump Company, the manufacturers of these pumps, have perhaps the largest existing line of patterns in the world for oil line pumps, having been closely identified with this business from its very beginning.

BY RAIL TO GUATEMALA.

Advices from the City of Mexico say the Pan-American Railroad Company has made application to the governments of Guatemala and Mexico for concessions to build a bridge across the Suchat River. The Guatemala Central extension will soon be finished to a connection with the Pan-American at the international boundary, thus forming an all-



Pump for Regular Oil Line Service.

which stretch between the oil fields and the refineries. The latest developments in the transportation of oil are the rifled pipe line in which oil and water are introduced into the line together and

very much less than is the friction of oil without the water envelope.

The development of scarcely lesser moment is the application of triplex power pumping machinery operated by

rail route between points in the United States and Mexico and the City of Guatemala. The Pan-American has erected 10 new steel bridges during the last few months.

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HERO WORSHIP.

A MERICANS do not like to be called hero worshippers, but in the sense of being eager to find heroes to worship, they take the lead. It may be claimed that some other nations do more hero worshipping, but their heroes are of long standing, well tried and guaranteed to wear. Americans are unique in their quickness to appoint men as heroes—and to depose them with equal quickness, which is perhaps a natural sequence.

The latest hero is E. H. Harriman. Mr. Harriman says, with some irony, that three years ago he was called a speculator. Doubtless he feels that now he is recognized as a builder instead, and quite probably, but that does not mean that he has not been a speculator. He has been both. What, however, of those who worship him by marking time in the stock market until they find out how his health is and what he is going to do next? They are speculators and nothing else. A man who buys a piece of real estate before he improves it is a fairly sensible man but if he is entitled to worship it is not because of his acumen in buying it first, but because of his ability in improving it. Another man buys a piece of real estate because somebody else is improving the neighborhood and the sentiment which inclines him to worship the man who is doing the work of improvement is not such as to command profound admiration from the public at large.

The contest as to what element—the

railroads or the business—is responsible for the joint increase in commerce and railroad facilities, is as old as the railroads themselves. The railroads pass through the large towns, or the large towns are located on railroads, whichever one chooses to say. A railroad, in popular estimation, is generally represented by one man, while a large community never is. The American obsession of hero worship can find a hero in the railroad, but cannot find a hero in the community, and hence the condition of hero worship in railroad matters which we find to-day, a condition which, it ought to be confessed, is not an eminently satisfactory one.

As Mr. Gary says, although if the cable dispatch quotes him with verbal accuracy, not with his usual polished diction, "If he (Mr. Harriman) should retire from active participation it will no doubt have a marked effect, but it will be only temporary, for no single man can materially interfere with or any longer postpone the increasing and permanent success of business in America." The idea of postponing "the increasing and permanent success of business" is not altogether clear cut and happy, but perhaps Mr. Gary's usually graceful language has been maltreated. The sentiment is plain, at any rate, and is very apropos.

The controversy as to whether business builds up the railroads or the railroads builds up business cannot develop a categorical answer. There is influence on each side and the influences are so different in kind that they cannot be measured for the purpose of ascertaining which preponderates. There is no common unit in terms of which each can be expressed. Let that question go: consider only the railroads. Given the the necessary attractive commercial conditions, what have been the chief factors producing railroad expansion? The first railroads were mere nothings, low speeds, small loads, and enormous ton-mile costs, compared with the railroad of to-day. What Mr. Harriman has been doing could not be done with such roads. What is the greater, the work which has been done to make the standard railroads of to-day, or the work which somewhat enlarges their usefulness, by discerning in which particular directions they should expand first, or finding means for expansion just a little sooner than less capable men would? The one work has been carried on continuously by thousands of men, the other work sometimes makes a single man prominent for a time, and the Americans make a hero of that man.

In 1890 the average freight train load, of all the railroads in the country, was 164 net tons. In 1908 it was 366 tons. Recently the Pennsylvania hauled 5,544

tons in a train with one engine, and the New York Central shortly beat that record with 5,775 tons. The hundreds of men who have kept the freight hauling capacity so far beyond what the exigencies of traffic permit as an average, are not heard of. They are common people, whom Lincoln said the Lord must have loved, for he made so many of them. What, however, of the good their united effort has done? A quarter century ago a 15-ton load for a car was large. With the genius of a very few men, made fruitful by the general progress of industry, a 50-ton load is common, and larger loads are carried. From moving a few miles an hour over a rickety track passenger trains have come to move 60 or 75 miles an hour over a track which is kept in safe condition only by the conscientious and assiduous work of thousands of men. In 1890 there was an average of 4,376 tons of freight per mile of railroad; in 1907 the average had increased to 7,676 tons. This is per mile of railroad, and while the railroad builders were active in building additional road, which would pull down the average, the progress of industry was still greater, and effected a large increase, not simply in the total tonnage, but in the tonnage per mile.

The good services which men like Mr. Harriman occasionally perform for the public are important, but they are nothing like as important as the rank and file in railroad work perform. There is no comparing the sum totals. What the leader does is simply something which is done a little sooner than if the work were left to more common intellects. It would be done some time in any event. What the rank and file do is work which would never be done if they did not do it, for there would be no one else to do it.

After all, there is a bill to pay, and it is always the public which pays it. If a leader brings about a service a little sooner than would otherwise be the case, the bill must be paid, and not only that, but there is a rate of paying established, and that rate is likely to remain indefinitely. Possibly for a few years there is a benefit, but if the improvements came a little later, the loss would soon be over and the annual rate of payment, over the indefinite period, would likely be enough less to make up for the loss in a short time.

After all, it was the speculators, the class from which he intimates he has graduated, that awaited the homecoming of the great Harriman with bated breath. Honor to him for what of good there has been in his work, but greater honor to the tens of thousands of men, each in his own sphere, who have brought railroad equipment and operation to their present standard and are constantly im-

proving it. Their work is positive, and it is a public misfortune that a part of the work of men like Harriman is to take toll from the economies they create, whereby the public is deprived of part of the benefits accruing.

A RAPID PACE.

CONSERVATIVE iron and steel manufacturers are beginning to be disturbed over the rapidity with which prices of pig iron and finished steel products are being forced upward. Averaging all grades and districts, pig iron has been advanced by fully \$2 a ton. Finished steel products have been advanced by various amounts, up to \$6 a ton in the case of bars, plates and shapes. No one pretends to deny that the market has been entitled to a fair advance, on account of the improvement in conditions, and the doubts are only as to whether the pace is not too rapid.

This question hinges largely upon what the future course of demand will be, since it is obvious that the increase thus far does not warrant the greater of the advances. In the case of pig iron, for example, all capacity is not yet engaged; additional furnaces are being blown in from time to time. Getting back to first principles, the market ought not to advance, in such a position, except as furnaces with lower costs are filled up and prices must be offered which will justify furnaces to blow in which have higher costs of production. Certainly it cannot be contended that blast furnaces lately gone into blast or about to go into blast have costs \$2 per ton higher than the merchant furnaces which were in blast when prices were lowest.

In steel products a similar position is presented as to the relation between capacity and demand, while the position is dissimilar in the relation between activities and production costs. The production of finished steel is still being increased; the ultimate capacity has not been reached. For months past our news reports have been of additional capacity being put into use week by week, and there is still more of that for the future. The potential capacity of the industry, in finished steel products, has not yet been reached. In pig iron it may be claimed that prices advance long before total capacity is engaged because some furnaces can make pig iron more cheaply than others and when the low cost furnaces are taken care of the market advances to a point allowing higher cost furnaces to do business. No such principle can be held to apply to the finished steel trade in the movement which started a few months ago. It has been made perfectly patent that the independents have taken the lead in advancing prices, the United States Steel

Corporation merely following, whereas to apply the principle referred to, it would be necessary to claim that the Steel Corporation's costs of production are higher than those of the independents. Possibly in a measure this could be shown, on account of the Steel Corporation's heavy fixed charges, but that would prove nothing for this case, since the fixed charges go on anyhow and when the corporation is in business it must mold its selling policy according to the bare factory cost of production, the mere additional cost of making a ton of finished steel as compared with not making it, but still meeting its fixed charges.

As was said at the outset, the question of whether the pace of advancing prices is too rapid hinges largely upon the future. The present has not given full warrant for some of the advances which have been made. The hope must be that the next three years will duplicate, as to activity, the period 1905-6-7. There is no possibility of the high pressure of that period being repeated. The general business of the country has become more conservative. To duplicate 1905-6-7 would mean a demand considerably beyond the existing capacity, greatly increased as it has been. On January 1, 1905, the country had less than 23,000,000 tons pig iron capacity; demand became so heavy that new furnaces were built and projected; the completion of some of them brought capacity to 28,000,000 tons before the heavy demand ceased and the others projected were such as to bring the capacity ultimately to more than 31,000,000 tons. In other words, the pressure of demand in 1905-6-7 was such as to increase capacity by 8,000,000 tons over 23,000,000 tons. Since the panic additional furnaces have been projected, giving us a prospect of about 33,000,000 tons. There is, then, no possibility of the near future duplicating the pressure of 1905-6-7, since that period meant an increase of 8,000,000 tons on 23,000,000 tons, and the future cannot promise an increase of 8,000,000 tons on 33,000,000 tons.

Evidently the extreme pressure of 1905-6-7 will not be duplicated. If not, prices should not advance as rapidly as in 1905, but a reference to the records show they did not advance them. While 1905 was a good year, with sustained demand, pig iron declined steadily from January to July or August, and some finished products also declined. In 1906, another year of sustained demand, there were likewise dips. It is simply absurd in the circumstances, to expect this advancing tendency to continue indefinitely. When the halt will occur is another matter. There is no immediate sign of a halt, but it will be strange if it does not occur well before April 1,

next, and then the trade will soon be ready for another revival.

However, it is all in human nature. There was a profound failure of confidence; it is natural that the reaction should be vigorous and that it should run a little too far.

A RETROSPECT.

OUR issue of August 30th, 1909, an even 20 years ago, contains more on tin plate, which was a very live subject in those days. The great point of interest was the little dipper which was to be established at the Pittsburgh Exposition, to show the public that "tin plate could be made" in the United States. The argument was being made in a good many quarters that it could not be, that the climate was wrong, the tin wouldn't stick, etc. It seems curious, at this time, that questions should be raised such as were raised at that time. In all the arguments pro and con there was very little analysis of prospective costs. The arguments were nearly altogether of general conditions, of course as affecting costs in a way, but still not the practical analysis which one would expect from the present viewpoint. There is an editorial in the issue before us, in which the "Engineer" and the "Ironmonger," of England, were quoted as to the experimental plant about to be established in Pittsburgh, and the general trend of the movement. Our British friends thought it would be a long time before the tariff could be increased, and thought that with the great advantages they had, of "possession, position for shipment, trained labor, and all materials on the spot" would count for a great deal in the prospective contest. The lengths to which the politicians were going in discussing the tin plate matter is illustrated by our editorial, making a special point of the fact that the British journals quoted looked upon the prospect of our being able to succeed much more favorably than did the politicians of the opposition. It may be recalled, however, that some time afterwards President Cleveland was quoted as asking a British visitor to let him know of the exact location, in the event of his finding any tin plate works in the United States, because he wanted to know where they were, when it was just about that time that Col. Ayer, representing the Government, printed official reports of the production, by quarters, of tin plate in this country.

An interesting industrial item is that the Pittsburgh Tube Works had just started filling an order for 17-inch pipe, this being the first of the size that had been turned out at the mill for 24 years.

Market Conditions, Prices in Producing and Buying Centers

Price Readjustments Coming; Pig Iron Reaches New Levels.

PITTSBURGH. — Early re-adjustments of prices in a number of lines in the steel trade were forecasted by the developments of the week in Pittsburgh district, while pig iron completely justified the claims of the optimists by reaching new high levels, with the minimum of \$16.50, Valleys for Bessemer predicted for it in this report a week ago.

All lines of semi-finished steel reflected the heavy buying by a decided stiffening of prices, excepting only the railroad equipment and track supply lines. An advance of \$1 a ton in structural shapes and plates is confidently expected with the 1st of September, in harmony with the advanced quotations on steel bars. The demand for steel billets is the heaviest since October, 1907, and substantial premiums are being paid in Pittsburgh district. The sheet tonnage entered by the Steel Corporation for the month of August promises to be 20 per cent greater than in any August in its history, and the independents increased their operations to a practical maximum of capacity, while the leading interest put on a full 80 per cent of its sheet mill capacity, in the face of the rapidly dwindling labor troubles.

The Cambria Steel Company's advance during the week of \$1 a ton in steel bars to 1.40c, 5 cents above the new minimum recently established by the Carnegie Steel Company, does not fix the market, for the Cambria Company puts out a special quality of steel that frequently commands a higher rate than the general quotations. For instance, the Jones & Laughlin Company still are quoting steel bars at 1.35c, Pittsburgh, for immediate delivery and nearly all the independents are following this lead, though the trend of the market would indicate an advance at least by the beginning of the last quarter. Republic Iron & Steel is holding iron bars firmly at 1.50c, the price they have been quoted for some time. Pipe prices also have stiffened in the east, and the predicted advance is looked for within 10 days.

Meantime, notwithstanding the putting on of increased capacity in its steel mills by the United States Steel Corporation, and the continued buoyancy of the iron market, the railroads are proving a disappointment in their orders for track supplies and equipment. True, they have been heavy buyers of iron and unfinished steel for foundry and repair work, and new construction is consuming large tonnages of structural material, but the

rail mills and the car companies are not getting the proportion of the prosperity that seemed to be in sight when the trunk lines began their buying campaign in July. With a car famine impending as a result of the coming record crop movement, and with equipment badly run down as a result of last year's economies, the railroads have not rushed into the market as some writers of the daily press would lead the public to believe. The car companies could double their present output without much straining, if the railroads would really adopt the liberal buying spirit they have been boasting about, in the matter of new rolling stock. The Pennsylvania's order, aside from the cars to be turned out at its own shops, totals only a little more than 6,000 steel cars, to date, while the Baltimore & Ohio has given allotments of 5,600, where some 10,000 cars were announced to be ready for letting, and even that would not fill the company's immediate needs.

The only important lettings of the past 10 days in the steel car trade were 500 cars by the Ann Arbor Company, to the Standard Steel Car Company; 2,000 by the Rock Island, divided among the American Car & Foundry Company, the Standard Steel Car Company, and the Western Car & Foundry Company; 400 by the Carnegie Steel Company's Union Railroad to the Pressed Steel Car Company, and about 40 specially built steel cars for the Jones & Laughlin Company's subsidiary railroad to the American Car & Foundry Company. The aggregate tonnage of these will not be sufficient to put on any additional capacity at the car plants, and the only inquiries known to be in the hands of the car builders are from the Chicago Great Northern, the Erie, and the New York, Ontario & Western, for an aggregate of about 1,400 cars. The Standard Steel Car Company's Butler plant is doing a little better than half its accredited maximum output, and the company has not yet started its Hammond, Ind., plant. The Pressed Steel Car Company has made no move to start its Woods Run plant, which is not affected by the present strike, and if its labor troubles at McKees Rocks should come to an end to-morrow, it is doubtful if that plant would have orders to run it to its extreme maximum capacity longer than 90 days.

In the steel rail trade, Chicago and Gary are announced to be running full, but Steel Corporation authorities say that those great plants, if pushed, could increase their present outputs nearly 50 per cent; while the Pittsburgh capacity

of the Carnegie Steel Company is still running at 50 to 60 per cent.

The boast of the iron and steel industry, outside of these two lines, however, is that it has reached a point where the railroads are not needed to produce a full degree of prosperity. Small business in plates and shapes has added to the rush in the steel mills, and finished product manufacturers have swelled the inquiries so that the steel mills bid fair to be still worse behind in deliveries than now by the close of the present quarter.

The forecast in this report a week ago of a minimum price of \$16.50 for Bessemer pig iron within a week was justified within a few days after it was made, by the entire withdrawal of the quotation of \$16, Valley, for immediate delivery, and the substitution of the new price of \$16.50. The Youngstown Sheet & Tube Company, on an inquiry for 15,000 tons of Bessemer for delivery this year, secured 7,500 tons through the Bessemer Pig Iron Association at \$16, when it was found impossible to secure any more. The bid was raised to \$16.50, and 6,500 tons more were taken at this figure. The company still has an inquiry out for 1,000 tons, making up the full 15,000, and it is said it will be in the market shortly for 5,000 tons more.

A market was made on standard Bessemer for 1910 delivery, by the sale of 1,500 tons to a Pittsburgh foundry and machine company at \$17, Valley furnace, for the first half of 1910, and 1,000 tons to another concern for first quarter at the same price. It is not believed these figures can be duplicated at present, however. The prediction of \$17.50 Bessemer after October 1, and \$18 Bessemer on January 1, may sound wild just now, but it is being freely made by usually conservative men in the market, and a number of furnaces have announced that they are holding off for the last named figures before opening their books for 1910 sales. There are still some accumulations held by Bessemer furnaces in their yards for better prices for spot delivery. On small lots, \$16.75 was paid during the week just ending for immediate delivery.

Though no sales of large quantities of basic iron were reported during the week, it is quoted at \$15.50, Valleys, an advance of 25 cents over prices of a week ago. Single car lots have been sold during the week just ended at \$16. The last large purchase, that of the Jones & Laughlin Steel Company, of 6,000 tons at \$15.25, Valley, and higher, could not be duplicated now. In foundry irons, a Pittsburgh interest bought

2,000 tons of No. 2 for delivery over the first half of 1910, paying \$16, Valleys, for some and \$16.25, Valley for the remainder. Another sale of 5,000 tons of No. 2 foundry was reported, for delivery during this year, some of which it is believed brought \$15.50. There is little question but \$15.50, Valleys, is the minimum on No. 2 foundry for the balance of this year, from now on, and the trade would not be surprised to see an advance of another 25 cents on that figure. A lot of 1,000 tons of gray forge brought \$14.75, Valleys.

While the flow of new business to the makers of semi-finished steel has not been particularly large during the past week, specifications on old contracts continue very heavy, and beyond current output, so that all plants, both combine and independent, are being thrown further behind in deliveries. One order for 10,000 tons of billets went begging during the week, and is not yet filled, decided premiums being asked, and forging billets for immediate delivery bring up to \$30, Pittsburgh. The Pennsylvania Steel Company, at Steelton, took an order for 10,000 tons of billets during the week, at a considerable premium. In plates, the Carnegie Steel Company is furnishing upward of 40,000 tons on orders already placed with the car companies for new rolling stock. The Carnegie Company also will furnish the 26,000 tons of plates required for the two new battleships.

In structural lines, the American Bridge Company took two large contracts which will increase work at the Ambridge plant—one for the new Wheeling & Lake Erie shop buildings at the new terminal at Brewster, O., and another for the 17,000 tons of new structural work on the Westchester construction out of New York, by the New Haven Railroad. The McClintic-Marshall Construction Company has taken the steel, 6,000 tons, for the new Forged Steel Wheel Company open hearth plant at Butler, Pa. The American Bridge Company will fabricate the 1,500 tons for the new Philadelphia & Reading docks at Superior, Wis., on which Heyl & Patterson have the contract. The Jones & Laughlin Company will furnish the steel for several new building operations in New York, aggregating 2,000 tons. The Cambria Steel Company secured the 900-ton order for a Pennsylvania Railroad draw span at Johnstown, Pa. Considerable tonnages of sheet piling have been taken by the Michigan Central and the Baltimore & Ohio, from the Jones & Laughlin Steel Company, for dock work along the lakes. The Baltimore & Ohio work will include some heavy construction at Cleveland.

The scrap market continues uncertain,

with many dealers holding for higher prices. The higher price of old material has, in some cases resulted in an enlarged consumption of basic pig. Heavy melting scrap is held pretty firmly at \$17, reflecting the tightened conditions at Chicago and in the East.

Sales were reported of several moderate-sized lots of ferromanganese for early delivery at \$42, Baltimore, or \$43.95, delivered Pittsburgh, also two fair tonnages for next year's delivery at \$43.50, seaboard.

The ferromanganese market has been rather irregular, there being one or two sellers of prompt at \$41, seaboard, and at not much over this for next year, but the low sellers have withdrawn. Fifty per cent ferrosilicon is well established around \$65 Pittsburgh, the price quoted last week, but there is still much range in quotations.

Awaiting Railroads' Pleasure On 1910 Rail Orders.

NEW YORK.—The response of the railroads to the opening of the books of the United States Steel Corporation for rail orders for 1910 has not thus far been altogether satisfactory. A total of 210,000 tons of reservations have been entered, 145,000 tons by the Santa Fe and 60,000 tons by the Chicago & Northwestern and 5,000 tons scattering. The Rock Island, Pennsylvania Harriman lines and the New York Central, all are negotiating with a view to placing some business, but it does not seem likely that the 1910 tonnage will fulfill the optimistic anticipations of the Steel Corporation. About half of the aggregate so far placed is for open hearth rails. For this year's delivery orders still are slow. The Maryland Steel Company has sold 12,000 tons to the Southern Railway, of which 4,000 are for prompt delivery and the balance through the remainder of this year. The Tennessee Company also will roll 28,000 tons for the same road, for delivery this year. This is the largest single rail order in some weeks, for 1909 delivery. Rail mills still are operating indifferently in the West, though Eastern plants are fairly well filled up to the middle of the last quarter. The 5,000 tons recently ordered by the Burlington of the Pennsylvania Steel Company, were for the special ferro titanium grade.

The New York, New Haven & Hartford's 17,000-ton order for the structural work for the Westchester branch, let through the City & County Contracting Company, was taken by the American Bridge Company after lively bidding by independent concerns. The American Bridge Company, it is said, still has considerable excess capacity, while a number of the independents are well filled up. The Westchester work may aggreg-

ate 24,000 tons before it is finished. The Pennsylvania Steel Company will supply the material for the 1,200-ton Twenty-second regiment armory contract. The week has seen over 45,000 tons of structural lettings here, of which the American Bridge Company secured about 25,000 tons.

New contracts for cast iron pipe aggregating 11,000 tons, by the City of New York and a Massachusetts municipality, went to the United States Cast Iron Pipe & Foundry Company. Eastern mills are well filled with orders for pipe, and the promised price advance is in sight. Some of the Eastern companies already are quoting \$25.50 minimum per net ton on six-inch, at tidewater, but the larger interests are still quoting \$24 and \$24.50.

Additional furnaces will be blown in shortly after the first of the month, for all grades of pig iron are well established on the new high price levels. Six additional stacks, producing foundry and basic, will be in operation within 10 days. Basic, though scarce, can still be had for \$18, delivered, for the balance of the present year. Considerable foundry iron has gone to New England, sales being on a basis of \$17, furnace, for No. 2X. Buffalo furnaces are holding at \$15.75 furnace, for the remainder of this year, for No. 2X foundry, and \$16.25 for 1910 delivery. Virginia producers have advanced to \$15, furnace. Good sales are reported of ferro-alloys, about 3,000 tons of ferromanganese changing hands at \$43 to \$44, New York. For 50 per cent ferrosilicon \$63 to \$63.50, New York, duty paid, is being asked.

Gary Production Relieves Chicago Situation.

CHICAGO.—With the new plant at Gary turning out forging billets, and the rail mill there reaching an output of at least 40,000 tons of rails for the month now ending, the Chicago situation in steel products is somewhat relieved, but the shortage in bars, plates and shapes still continues. Indeed, the structural mills are probably suffering from delayed deliveries more than any other branch of the trade. Bar mills in this district have made new production records for July and August.

Few large contracts for structural material were closed in Chicago district during the week just ended, though a good tonnage of small lettings was entered. The George A. Fuller Company has the contract for the new Brooks estate building, which will require 2,300 tons, but the contract for the steel for it has not yet been placed.

Wire rods still are quoted in this market at \$32, Pittsburgh, and the demand is much firmer. Car shop orders are continually increasing, with a sympathetic

movement in bolts, nuts and other accessories. As an instance of the way the railroad orders affect many different lines, the Steel Corporation is in receipt of a single order for some 8,000 car axles for immediate delivery.

The tonnage for the week in pig iron has been exceedingly heavy. Inquiry has been specially good for foundry and malleable grades. The movement probably reached 40,000 tons, in all grades. A large machinery manufacturer closed with Bay View furnaces for 10,000 tons of No. 2 foundry for delivery during the first half of 1910 at \$18.50, Milwaukee, a new high figure. The Crane Company, of Chicago, took 7,500 tons of Northern foundry and malleable, including one lot of Virginia iron. The activity of Southern iron has taken out of the market about all of the No. 2 that could be had at below \$13.50, Birmingham, and some furnaces in the South are asking \$14 for this year's deliveries. Sales of 2,000 tons of Jackson county silveries are reported at advanced figures. The leading Jackson county interest is now asking \$19 furnace, equivalent to \$21.40, Chicago, for 8 per cent iron. Northern No. 2 was held pretty firmly at \$18 at the close of the week.

Scrap iron prices are up an average of half a dollar as the result of the week's business, reaching the highest level since the panic two years ago. Many of the dealers are talking still higher prices, basing their confidence on the fact that the supply of spot scrap material in transit is so small. On old car wheels, dealers have been asking all the way from \$17 to \$18.50, with nothing available at the lower figure excepting small lots. It is predicted, however, that the prices will show a reaction to at least \$16.50, on actual sales.

Shipping Plates West; Talk of Foreign Iron.

PHILADELPHIA — Eastern plate mills have been shipping their product as far west as Ohio, illustrating the tense condition of the Western market. Plate, billet and bar mills have increased to their absolute maximum capacity during the week. Premiums are freely offered by Western buyers. Railroad work is absorbing much of the plate and shape stocks; while billets are daily growing scarcer for prompt delivery.

The report just issued by the Eastern pig iron association shows a heavy increase in orders on books and a substantial decrease in stocks in furnace yards. Twenty-seven stacks are producing, with six additional stacks due to become operative before January 1.

Pig iron is rapidly approaching a price level where active competition by foreign iron is not possible, though during

the past week importers have watched prices in Great Britain advance at about the same pace as those in this country. So long as the British market continues strong, local importers do not expect to see any remarkable influx of foreign iron into the American market. Negotiations continue for the importation of billets, but no important business has been closed, and very close figuring is required.

With prompt deliveries of basic iron almost impossible to obtain, there has been a brisk demand for this grade all week. The present shortage is reflected in heavy transactions for 1910 deliveries, some 20,000 tons having been sold, at \$18, delivered, for the first half of next year. Total sales in this market for next year's deliveries in basic now aggregate over 50,000 tons, most of it at \$17.65 and \$18, delivered, though it is doubtful if any more of it is to be had at that figure. Foundry grades were advanced 25 cents a ton by a number of Eastern furnaces during the week, the ruling prices now being \$17, delivered, for No. 2X for any time during 1909. One sale, for delivery yet this quarter, was reported at \$17.25, but it cannot be considered as fixing the market. Some interests are refusing to quote \$17.50 for large shipments for last quarter, and there is little willingness on the part of furnaces to commit themselves on foundry iron prices for next year at all. Virginia foundry grades are quoted at \$18 for strictly last quarter delivery, though it is safe to say that \$17.50, delivered, can still be done in this market. The Virginia interests still are declining to quote figures for 1910 on foundry irons.

Eastern steel makers declare the test of the new scrap-buying combination during the past week has proven it entirely successful. The Bethlehem works found its stocks so large that it placed an embargo on further shipments for the present, and shipments also were ordered discontinued temporarily to the Pennsylvania works at Steelton. Independent dealers in scrap, who are still hopeful of breaking the combination, insist that the present abundance of material at the plants is due to the continuance of old contracts by the steel companies, which have not yet expired. It is claimed that the real test will come with the expiration of these contracts. The combined requirements of the interested mills are estimated at about 2,000 tons a day, and it is said by the independent dealers that more than half of this is still being supplied under the old arrangements. The mills claim to be getting all they want at \$17, delivered, while dealers say independent mills are willing to pay as high as \$17.50, and scout the figures quoted by the agents of the combination. An

interesting feature of the market will be the opening next month, by the Isthmian Canal Commission, of bids for its accumulations of scrap, said to aggregate 80,000 tons. No. 1 steel scrap is still quoted by dealers at \$17 to \$17.50, and Railroad No. 1, wrought, at \$19.50 to \$20.

Birmingham "Cleaned Up" Of Surplus Pig Iron.

BIRMINGHAM. — About three months ago the Sloss-Sheffield Steel & Iron Company had something like 90,000 tons of iron stacked on its yards. To-day this company has only about 5,000 tons on hand. This is given as an illustration of the manner in which the buying movement of the past few weeks has served to "clean out" the surplus iron in the Birmingham district.

The buying movement, which has served to reduce the stocks to the minimum and at the same time push the price of No. 2 foundry up from \$11 to \$13.50 per ton, is still very much in evidence and there is absolutely no cloud upon the industrial situation in so far as the iron men are concerned.

Inquiries for iron for delivery during the first quarter of the new year continue to come in, but the makers are apparently undecided as to what the quotations will be at that time and there is much hesitancy in fixing prices for delivery beyond the present year. A further advance is regarded as absolutely certain, not only by the furnace companies, but by those speculators who went into the market during the depression and bought with a view to holding until business revived. Most of the speculative iron was purchased around \$11 per ton, No. 2 basis, but despite the fact that the owners can now reap a profit of \$2.50 per ton there is little disposition to turn loose. The owners seem to think that they can command at least \$15 per ton before the new year is far advanced and most of them are disposed to hold.

The work of putting idle furnaces in shape for operation is being pushed by the various companies in this district and additional stacks will be lighted as rapidly as they are made ready. The Tennessee Coal, Iron & Railroad Company announces that No. 5 furnace at Ensley will be blown in on basic iron within the next few days.

As is known, charcoal iron is not yet on a sympathetic basis with coke iron, considering the rapid recent advances of the latter; therefore, it might be said the market is somewhat unsettled, in that an advance is looked for soon.

The cast-iron pipe market is reported as gaining strength, with a good many orders for small lots coming up for consideration. The leading soil-pipe inter-

ests have withdrawn their old quotations. The scrap market in some respects has advanced, and dealers are exceptionally buoyant. No. 1 railroad wrought brings \$12 to \$12.50.

Anxious to Place Orders for Next Year's Pig Iron.

CINCINNATI. — After considerable clamor by foundry interests, representative Northern and Southern producers of pig iron have opened their books for 1910 deliveries, and a considerable tonnage is reported to have been taken, on the basis of \$13.75 and \$14, Birmingham, for No. 2 Southern foundry, and \$15.50 to \$16, furnace, for the Northern product. Actual sales have been made at these figures, for first quarter or even first half of 1910.

Many of the Ohio buyers, after getting the quotations, are holding back, apparently in the hope of getting better prices, in the face of predictions that Ohio furnaces will be asking even a higher price before long. As for immediate shipments, there is thought to be some little spot metal to be had at \$15, Ironton, but most of it is held at 50 cents higher. The minimum on Birmingham iron, even for September delivery, is \$13.50, with very little to be had immediately. The speculative holdings dumped on the market sometime ago seem to have been pretty well absorbed.

Inquiries for this year's deliveries of malleable and foundry grades are still to be heard from foundry and machinery men who have underestimated their requirements for 1909. Some of them are having not a little difficulty filling their wants. A Michigan stove manufacturer is in the market for 7,000 tons of special analysis iron, some of it for delivery before the first of the year. An Ohio engine builder has bought 1,500 tons of Northern iron for this year's delivery.

There is a wide range on some grades of scrap metal. One sale of 3,000 tons of No. 1 railroad wrought brought approximately \$17, Chicago, while 1,000 tons of old car wheels sold at \$15, f. o. b. Cincinnati. Railroad wrought is quoted at \$14.50 to \$15.50, Cincinnati.

COKE PRODUCTION APPROACHES HIGH-WATER MARK.

The coke production of the Connellsville and lower Connellsville region has been running at 395,000 tons a week the last two or three weeks, there having been a steady increase for three months. This is a trifle over double the output made in August of last year, when the month opened with a rate of 190,000 tons in a week and closed with 200,000 tons. For a few weeks around October 1, 1907, production ran at 425,000 to 430,000 tons

a week, and this was high water mark in all history for the Connellsville region. The rate of output is less than 10 per cent below that rate at present. It is to be noted, however, that at that time there was a total of 34,850 ovens in the region, while now there are 38,483 ovens, so that the present output is 17 per cent below what could be done with the increased ovens under conditions similar to those of October 1, 1907.

The older heads in the Connellsville coke field, who have held out with consistency for \$2 coke or better seem to have won their fight for stable prices, and will have something on operators who have been selling low during the slump of 1908, says the "Connellsville Courier," of August 26. Some of these it is learned on reliable authority have contracted at \$2.25 and \$2.35 for the last quarter's supply, and will known authorities, and especially some well posted operators declare that \$3 coke will be on the market by April 1.

All hands in the Connellsville region are extremely optimistic as to prices. One large independent firm turned down a contract for a large tonnage for delivery during a period covering the next three months, on which \$2.25 was offered. The minimum price for standard Connellsville is \$2, ranging to \$2.25 for immediate deliveries, with \$3.50 for future business. The H. C. Frick Company fired no new ovens during the week. The Washington Coal & Coke Company puts its entire 1,000 ovens in blast during the week. The "Courier's" figures show a total of 30,962 ovens operating out of 38,483 in the two fields, for the week ending August 21, as compared with 30,829 the previous week.

Secretary George B. Irvin, of the Coke Producers' Association, in his weekly report, says:

Reports received of the coke oven operations in the Connellsville and Lower Connellsville districts for the week ending Saturday, August 21, shows 31,363 or an average of 82.5 per cent of the 37,999 ovens in the two districts, active. A majority, in fact nearly all of the plants, worked six days. The gain in active ovens during the week was 9-10 of one per cent. The estimated production for the two districts, 391,124 tons, an increase of 1,449 tons over the preceding week.

Shipments over the three railroads to Pittsburgh and points West were 11,732 cars, 374 more than the previous week and the unconsigned loaded cars were reduced to 302 or 62 cars less than reported the week before. A shortage of miners still exists, particularly in the "Klondyke" field.

THE NEW ENGLISH IRON AND STEEL SITUATION.

Ryand's Iron Trades Circular, London, gives these statistics for England, Scotland and Wales, received direct from blast furnace companies:

Total furnaces June 30, 1909.....	510
Total number in blast June 30, 1909..	314
Decrease in number of furnaces since March 31, 1908	6
Furnaces blown-in since March 31, 1908	11
Furnaces blown out since March 31, 1908	5
Furnaces being built	9
Furnaces being rebuilt or relined.....	64

The London Colliery Guardian, reviewing the situation, says:

It is a good sign that the American demand for British pig iron is much better than at this time a year ago. The improvement for the month of July in British pig iron exports to the United States from last year to this year has been from 3,222 to 10,751 tons, and in value from £28,742 to £67,879. The improvement for the seven months' period has been from 27,212 to 64,953 tons, and in value from £195,855 to £389,835. These figures are still, however, much below what was the case two years ago.

The better reports from America have had the effect of putting a little life into the tone of 'Change at Manchester. Judging by the action of the plate makers, works are not going to be found selling large quantities of steel at the lowest price. The plate makers have had a considerable amount of enquiries from America, and they at once met altogether, and put their prices up 5s, which shows they have been working at no profit whatever when enquiries like this send prices up. Prices of pig iron remain unchanged.

The failure of the Galvanized Sheet Manufacturers' Association to carry out the policy of price maintenance provokes much comment. Until the announcement was made that the regulation of prices was abandoned few members of the iron market suspected that the Association's control of the trade had been seriously weakened. It is easy to understand, however, that the members of the combine at last tired of maintaining a remunerative selling price mainly for the benefit of their competitors. The surprising thing is that the Association was capable of passing through these 18 months of depression and still keep up their rates. The price situation changes from hour to hour, but as this is written open market quotations are given as £10 10s to £11 for 24-wire gauge sheets f. o. b. in bundles, but London exporters declare the £11 figure to be an impossible one, stating that it cannot be obtained. It is estimated that in the last fortnight of July which succeeded the "break," some 28,000 tons of sheets changed hands, and buying is still going on briskly. Consumers assert that much of this business was done on a £10 5s level, and that this quotation still lives in buying circles.

SELLS BAR PLANT.

The Rogers-Shear Company, Warren, Pa., has sold its steel-bar mill at Franklin, Pa., to the Franklin Steel Company. The mill has been used for rolling steel reinforcing bars having elastic limits of 50,000 to 60,000 pounds per square inch, and the new owners will continue to use the mill for that work.

Range of Weekly Quotations of Pig Iron

PIG IRON

	Aug. 21.	Aug. 21.	Aug. 14.	Aug. 7.	July 31.	July 24	July 17.
At Pittsburgh—							
Bessemer	17.40@17.65	16.90@17.40	16.90	16.90	16.40@16.90	16.40@16.90	16.40
Basic	16.40@16.90	16.15@16.40	16.15@16.40	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15
No. 1 Foundry	16.90@17.40	16.90@17.15	16.90@17.15	16.90@17.15	16.40@16.65	16.40@16.65	16.40@16.65
No. 2 Foundry	16.40@17.15	16.15@16.65	16.15@16.65	16.40@16.65	15.90@16.15	15.90@16.15	15.90@16.15
Malleable Bessemer	16.65@16.90	16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15
Gray Forge	15.65@15.90	15.15@15.65	15.15@15.65	15.40@16.15	14.90	14.90	14.90
Low Phosphorus	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90
Ferro Silicon, 50 per cent	64.00@66.00	64.00@66.00	63.50@65.00	67.00@68.00	67.00@68.00	62.00@63.00	62.00@63.00
Ferro Silicon, 10 per cent	24.00@25.00	24.00@25.00	24.00@25.00	23.50@24.50	23.50@24.50	24.00	24.00
Silicon Spiegel, 10 to 12 per cent ..	25.00@27.00	25.00@27.00	25.00@27.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00
Spiegeleisen	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00
Ferro Manganese	43.95@44.95	43.45@44.45	42.95@43.95	43.45@43.95	43.45@43.95	43.45@43.95	43.45@43.95
At Virginia Furnaces—							
Basic	14.50@15.50	14.25@14.75	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00
No. 1 X	15.00@15.50	15.00@15.50	14.50@15.00	14.50@15.00	14.50@15.00	14.00@14.50	14.00@14.50
No. 2 X	15.00	14.50@15.00	14.00@14.50	14.00@14.50	14.00@14.50	14.00	14.00
No. 2 Plain	14.00@14.50	13.75@14.50	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75
Gray Forge	14.00@14.75	13.00@13.50	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00
At Birmingham—							
No. 1, Foundry	14.00	13.50@14.00	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00
No. 2, Soft	13.50@14.00	13.50	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00
No. 2, Foundry	13.50@14.00	13.50	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00
No. 3, Foundry	12.50@13.50	12.00@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00
No. 4, Foundry	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50
Gray Forge	12.00@13.50	11.25@11.75	11.25@11.75	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00
At Philadelphia—							
No. 2X Foundry	17.00@17.50	17.00@17.50	17.00@17.50	16.50@17.00	16.50@17.00	16.00@16.50	16.00@16.50
Basic	17.00@17.50	17.00@17.50	17.00@17.50	15.50@15.75	15.50@15.75	15.50@15.75	15.50
Gray Forge	16.00@16.50	16.00@16.50	16.00@16.50	15.25	15.25	15.25	15.25@15.50

STEEL.

Tons of 2,240 lbs., at Pittsburgh—							
Bessemer Billets	24.00	24.00	24.00	24.00	24.00	23.00@24.00	23.00
Open Hearth Billets	26.00	26.00	26.00	26.00	26.00	25.00@26.00	24.00@25.00
Forging Billets	28.00	28.00	28.00	28.00	28.00	28.00	26.00@28.00
Sheet and Tin Bars	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.00@26.00	25.00@26.00
Bessemer Steel Rails	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Open-Hearth Steel Rails	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Light Steel Rails—							
25 to 45 lbs.	28.00	28.00	28.00	28.00	27.00	27.00	27.00
16 and 20 lbs.	29.00	29.00	29.00	28.00	27.00@28.00	27.00@28.00	27.00@28.00
12 and 14 lbs.	30.00	30.00	30.00	30.00	29.00	29.00	29.00
8 lbs.	31.00	31.00	31.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00
Bessemer Wire Rods	31.00	31.00	31.00	31.00	31.00	29.00@30.00	29.00
Open-Hearth Wire Rods	31.00	31.00	31.00	31.00	31.00	29.00@30.00	29.00@30.00
Muck Bar, all pig iron	27.00	27.00	27.00	27.00	27.00	27.00	27.00

FINISHED PRODUCTS.

Tons of 2,000 lbs., at Pittsburgh—							
Skelp Steel Grooved	25.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00
Skelp Steel Sheared	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00
Railroad Spikes	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00
Sheets, No. 28	44.00	44.00	44.00	44.00	44.00	44.00	44.00
Galvanized Sheets, No. 28	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Beams, 3 to 15 inches	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00
Beams, over 15 inches	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00
Channels, 3 to 15 inches	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00
Channels, over 15 inches	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00
Tees, 3-inch and larger	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00
Zees, 3-inch and larger	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00
Angles, 3 to 6 inches	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00
Angles, over 6 inches	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00
Tank Plate	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	27.00@28.00	27.00@28.00	27.00@28.00
Boiler Plate	30.00	30.00	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00
Hoops	30.00	30.00	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00
Bands	24.00	24.00	24.00	24.00	23.00@24.00	23.00@24.00	23.00@24.00
Bessemer Steel Bars	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00
Open-Hearth Steel Bars	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00
Common Iron Bars	30.00	30.00	29.00	29.00	29.00	29.00	29.00

and Various Finished Iron and Steel Products.

July 12	July 5.	June 27	June 21.	June 14.	June 7	May 29.	May 22.	May 15.	1908 Aug. 29.
16.15@16.40	16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	16.15@16.40
15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.15@15.40	15.15@15.40	14.90@15.15	14.90@15.15	15.40@15.65
16.40@16.65	16.40@16.65	16.40@16.65	16.15@16.40	15.90@15.16	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	16.15@16.40
15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.40@15.65	15.40@15.65	15.15@15.40	14.90@15.15	15.65@15.90
15.90@16.15	16.15@16.40	15.90@16.15	15.65@15.90	15.50@15.65	15.40@15.65	15.40@15.65	15.15@15.40	14.90@15.15	15.40@15.65
14.65@14.90	14.90@15.15	14.90@15.15	14.90@15.15	14.50@14.65	14.50@14.65	14.50@14.65	14.40@14.65	14.15@14.35	14.65@14.90
20.00@20.90	20.00@20.90	15.90@20.00	19.50@20.00	19.00@19.50	19.00@19.50	19.00@19.50	19.00@19.50	19.00@19.50	21.25@21.75
63.00@64.00	63.00@64.00	61.00@62.00	62.00@64.00	61.00@62.00	61.00@62.00	63.00@70.00	62.00@65.00	61.00@62.00	69.00@70.00
24.00	24.00	24.00	24.00	24.00	24.00	25.00	25.00	25.00	26.50@27.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	33.50@34.00
29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	31.00@31.50
42.95@43.95	42.95@43.95	41.95@42.45	42.45@42.95	42.45@42.95	42.45@42.95	42.45@42.95	42.00@43.00	42.00@43.00	45.00@46.00
12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.50@12.75	12.50@12.75	12.50@12.75	12.50@12.75	13.75@14.25
14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.25	14.00@14.25	14.00@14.25	14.00@14.25	14.25@14.75
13.75@14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.50@13.75	13.50@13.75	13.50@13.75	13.50@13.75	13.75@14.25
13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.50	13.25@13.50	13.25@13.50	13.25@13.50	13.25@13.75
12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.50@12.75	12.00@12.25	12.00@12.25	12.00@12.25	12.00@12.25	12.25@12.75
12.50@13.00	12.00@12.50	12.00@12.50	11.75@12.00	11.75@12.00	11.75@12.00	11.50@12.00	11.50@12.00	11.50@12.00	13.00@13.50
12.00@12.50	11.50@12.00	11.50@12.00	11.50@11.75	11.50@11.75	11.50@11.75	11.25@11.50	11.25@11.50	11.25@11.50	13.00@13.50
12.00@12.50	11.50@12.00	11.50@12.00	11.25@11.50	11.25@11.50	11.25@11.50	11.00@11.50	11.00@11.50	11.00@11.50	12.50@13.00
11.50@12.00	11.00@11.50	11.00@11.50	10.75@11.00	10.75@11.00	10.75@11.00	10.50@11.00	10.50@11.00	10.50@11.00	12.00@12.50
11.00@11.50	10.50@11.00	10.50@11.00	10.25@10.50	10.25@10.50	10.25@10.50	10.00@10.50	10.00@10.50	10.00@10.50	11.50@12.00
10.75@11.00	10.50@10.75	10.50@10.75	10.25@10.50	10.25@10.50	10.25@10.50	10.00@10.50	10.00@10.50	10.00@10.50	10.75@11.25
16.50@16.75	16.50@16.75	16.75@17.00	16.75@17.00	16.75@17.00	16.75@17.00	16.75@17.00	16.00@16.25	16.00@16.25	16.50@17.00
15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.00@15.25	15.00@15.25	15.25@15.50
15.25@15.50	15.25@15.50	15.25@15.50	15.25@15.50	15.00@15.25	15.00@15.25	15.00@15.25	14.75@15.00	14.75@15.00	15.25@15.50
23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	25.00
24.00@25.00	23.50@24.00	23.50@24.00	23.00@24.00	23.00	23.00	23.00	23.00	23.00	25.00
25.00@27.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	27.00
25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	25.50	25.50	25.50	27.50
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.00
25.50@27.00	25.50@27.00	25.50@27.00	26.00@27.75	26.00@27.75	25.00@27.75	25.00@27.75	25.00@27.75	25.00@27.75	28.00@29.00
26.50@27.00	26.50@27.00	26.50@27.00	26.75@27.75	26.75@27.75	26.75@27.75	26.75@27.75	26.75@27.75	26.75@27.75	29.00@31.00
27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	32.00@33.00
29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	36.00@37.00
29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	27.00	33.00
29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	30.00	30.00	30.00	28.00	34.00
27.00	27.00	27.00	27.00	25.00	25.00	25.00	25.00	25.00	25.50
26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	25.00@26.00	29.00@30.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	30.00@32.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	33.00@34.00	33.00@34.00	34.00@36.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	45.00	45.00	50.00
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	71.00
26.00@27.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	32.00
28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
26.00@27.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	32.00
28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
27.00@28.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	33.00
27.00@28.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	32.00
26.00@27.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	32.00
28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	26.00	26.00	26.00	26.00	26.00	32.00
28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
29.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	36.00
23.00@24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	28.00
24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00	24.00	28.00
24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00	24.00	24.00	24.00	28.00
28.00@29.00	29.00	29.00	29.00	25.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	28.00

STEEL PLATES.

Base prices, tank quality, $\frac{1}{4}$ -in. thick,
per 100 lbs., f. o. b., Pittsburgh:

$6\frac{1}{4}$ to 100 inches wide\$1.30

Extras over base price—

3-16 inch thick .....	.10
Gauges 7 and 8 .....	.15
Gauge 9 .....	.25
Gauges 10 and 11 .....	.25
Circles .....	.20
Sketches .....	.10
Boiler and Flange quality .....	.10
Marine Steel .....	.40
Widths over 100, to 110 in .....	.05
Widths over 110, to 115 in .....	.10
Widths over 115, to 120 in .....	.15
Widths over 120, to 125 in .....	.25
Widths over 125, to 130 in .....	.50
Widths over 130 in	1.00

IRON AND STEEL SCRAP.

Old steel rails, re-rolling..	\$17.50	
Old steel rails, remelting..	16.50	17.00
Steel axles	20.00	20.50
Heavy melting scrap	16.50	17.00
Low phosphorus	20.00	21.00
Sheet scrap	15.00	15.25
No. 1 wrought scrap	17.00	17.50
Machine shop turnings ...	12.00	12.50
Cast borings	10.00	10.50
No. 1 cast	15.25	15.75
Old car wheels	16.25	16.50
Old iron rails	18.50	19.00
Axle turnings	13.50	14.75
Railway malleable	15.50	16.00

TIN AND TERNE PLATES.

Official prices, f. o. b., Pittsburgh—
Coke tins:

14x20, I. C.	\$3.55
14x20, 100 lbs.	3.40
14x20, 95 lbs.	3.35
14x20, 90 lbs.	3.30

Charcoal tins:

A Grade, 14x20, I. C.	4.15
A Grade, 14x20, 100 lbs.	4.00

Ternes:

20x28, I. C.	6.80
20x28, 200 lbs.	6.50

STEEL RAILS.

Fifty pounds and Heavier—

500-ton lots and over	\$28.00
Car load lots	30.00
Less than car load lots	32.00

Light Rails—

12 and 14 pounds	\$30.00
16, 20 and 25 pounds	28.00
30 and 35 pounds	28.00
40 and 45 pounds	28.00

Relaying Rails

Subject to inspection, f. o. b. Pitts-	burgh:
Stand'd 50 lbs. & heavier..	\$22.00 \$22.50
25 to 40 lbs.	23.00 23.50
16 to 20-pound rails	24.00 24.50
12-pound rails	25.00 26.00

STEEL SHEETS.

Official prices, per 100 lbs., f. o. b.,
Pittsburgh—

Gauge.	Black.	Galv.
30	\$2.35	\$3.60
29	2.25	2.35
28	2.20	3.25
27	2.15	3.05
25-26	2.10	2.85
22-24	2.05	2.65
17-21	2.00	2.50
15-16	1.95	2.40
13-14	1.90	2.30

Blue Annealed.

10 and heavier	\$1.65
11-12	1.70
13-14	1.75
15-16	1.85

Corrugated Roofing.

Per square, 28 gauge, f. o. b. Pitts-	burgh—
Painted	\$1.55
Galvanized	2.80

WIRE AND NAILS.

Prices to jobbers in car load lots, per
100 lbs.; retailers 5 cents additional:

Wire nails	\$1.80
Plain wire	1.60
Painted barb wire	1.80
Galvanized wire	2.10

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per
cent pure are held at 24c per pound in
ton lots.

For small lots of 100 pounds and over
advances of 3c per pound are charged.
Rods and wire.....base price 32 cents
Sheetsbase price 34 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

	Per Ton.
Mine-run	\$1.10@1.20
$\frac{3}{4}$ -inch lump	1.20@1.30
$1\frac{1}{4}$ -inch lump	1.30@1.40
3-inch lump	1.55@1.65
$1\frac{1}{4}$ -inch nut	1.10@1.20
$\frac{3}{4}$ -inch slack .....	.55@.65

At Buffalo—

	Pgh.	Frep't
Mine-run	\$2.35	2.05
$\frac{3}{4}$ -inch lump	2.45	2.15
$1\frac{1}{4}$ -inch lump	2.55	2.25
$\frac{3}{4}$ -inch slack	1.85	1.70

At Cleveland—

	Pgh.	No. 8
Mine-run	\$2.10	\$1.80
$\frac{3}{4}$ -inch lump	2.20	1.90
$1\frac{1}{4}$ -inch lump	2.25	2.00
$1\frac{1}{4}$ -inch nut	2.10	1.80
$\frac{3}{4}$ -inch slack	1.55	1.45

At Detroit—

	Pgh.	No. 8
Mine-run	\$2.50	\$2.05
$\frac{3}{4}$ -inch lump	2.60	2.15
$1\frac{1}{4}$ -inch lump	2.70	2.25
$1\frac{1}{4}$ -inch nut	2.50	2.05
$\frac{3}{4}$ -inch slack	2.00	1.65

At Chicago—

	Pgh.	No. 8
Mine-run	\$3.00	\$2.55
$\frac{3}{4}$ -inch lump	3.10	2.65
$1\frac{1}{4}$ -inch lump	3.20	2.75
$1\frac{1}{4}$ -inch nut	3.00	2.55
$\frac{3}{4}$ -inch slack	2.45	2.25

MERCHANT PIPE.

Base discounts, car load lots, subject
to one point and 5 per cent extra to
large jobbers.

	Steel	
	Black.	Galv
$\frac{1}{8}$ and $\frac{1}{4}$ -inch .....	.72	56
$\frac{3}{8}$ -inch .....	.73	58
$\frac{1}{2}$ -inch .....	.76	64
$\frac{3}{4}$ to 6-inch .....	.80	70
7 to 12-inch .....	.75	60

Extra strong plain ends—

$\frac{1}{8}$ to $\frac{3}{8}$ -inch65	53
$\frac{1}{2}$ to 4-inch72	60
$4\frac{1}{2}$ to 8-inch68	56

Double extra strong—

$\frac{1}{2}$ to 8-inch61	50
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WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe
car load prices to consumers; prices to
jobbers one point and 5 per cent.

$\frac{1}{4}$ -inch .....	.69	..
$\frac{1}{8}$ and $\frac{3}{8}$ -inch .....	.70	56
$\frac{1}{2}$ -inch .....	.73	61
$\frac{3}{4}$ to 6-inch .....	.77	67
7 to 12-inch .....	.72	57

Extra Strong and Plain Ends—

$\frac{1}{8}$, $\frac{1}{4}$ and $\frac{3}{8}$ -inch .....	.62	50
$\frac{1}{2}$ to 4-inch inclusive .....	.69	57
$4\frac{1}{2}$ to 8-inch, inclusive65	53

Double Extra Heavy plain Ends—

$\frac{1}{2}$ to 8-inch, inclusive58	47
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BOILER TUBES.

	Steel	Iron.
1 to $1\frac{1}{2}$ inches50	45
$1\frac{3}{4}$ to $2\frac{1}{4}$ inches62	45
$2\frac{1}{2}$ inches64	50
$3\frac{3}{4}$ to 5 inches .....	.70	57
6 to 13 inches .....	.62	45

Less than car load lots, two points less.
 $2\frac{1}{2}$ inches and smaller, over 18 feet, 10
per cent, net extra.

$2\frac{3}{4}$ inches and larger, over 22 feet, 10
per cent net extra.

MERCHANT STEEL.

Cold rolled and ground shafting, 60
per cent off, car load lots; 56 per cent
off less than car load lots; delivered in
base territory:

Planished Tire Steel	\$1.40@1.50
Iron finish, up to $1\frac{1}{2} \times \frac{1}{2}$ in. ..	1.35@1.45
Iron finish, $1\frac{1}{2} \times \frac{1}{2}$ in. and over	1.20@1.30
Toe Calk Steel	1.70@1.80
Railway Spring Steel	1.75@1.85
Cutter Shoe	1.95@2.05
Flat Sleigh Shoe	1.55@1.65
Crucible Tool Steel	7.00@8.00
Open-Hearth Spring Steel ..	2.05@2.30

Freight Rates On Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig Iron, from Virginia furnaces to Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	\$2.35	\$3.60	\$3.20	\$2.35	\$3.30	\$3.35
Bristol		3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.35	3.60	3.20	3.00	3.95	4.00
Kayula, Ivanhoe, Rural Retreat ...	2.35	3.60	3.20	3.40	4.35	4.40
Pulaski, E. Radford, Max Meadows. 2.90	2.35	3.60	3.20	3.25	4.20	4.25

Pig Iron from Birmingham, Ala., tons of 2,240 lbs. to—

Boston, by water	\$4.60
Chicago	4.35
Cincinnati and Ohio River	3.25
Cleveland	4.35
Milwaukee and Northwest	4.75
New York, all rail	5.95
New York, rail and water	4.25
Philadelphia, all rail	5.00
Philadelphia, rail and water	4.00
Pittsburgh	4.90
St. Louis	3.75

To Pittsburgh from—

Dunbar Furnaces .....	.85
Kittanning Furnaces .....	.60
Scottdale Furnaces .....	.85
Valley Furnaces .....	.90
Wheeling .....	.90
Valley Furnaces to—	
Cleveland .....	.90

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	Billets.
Baltimore	\$2.15	\$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville .....	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va. ....	.90	1.00
Youngstown .....	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango Valleys ..	1.00	
Wheeling	1.00	

COKE.

From Connellsville region, per 2,000 pounds to—	
Boston	\$3.50
Buffalo	1.00
Baltimore	2.25

Cleveland ...	1.65
Columbus	1.65
Cincinnati	2.10
Chicago	2.65
East St. Louis	2.80
Hamilton, Ont.	2.20
Joilet	2.65
Louisville	2.65
New York	2.85
Pittsburgh .....	.80
Philadelphia	2.15
Richmond, Va.	3.04
Toledo	2.25
Valley Furnaces	1.35

TIN PLATE.

	C.L.	L.C.L.
Per 100 lbs., Pittsburgh to—		
Boston, Mass	18	21
Albany, N. Y.	16	19
Baltimore, Md.	14½	17½
Birmingham, Ala.	41	68
Cleveland, O.	10	13
Columbus, O.	12	15
Cincinnati, O.	15	18
Concord, N. H.	18	21
Charlotte, N. C.	39	61
Charleston, S. C.	33	70
Charleston, rail and water..	23½	31
Covington, Ky.	15	18
Chattanooga, Tenn.	33	65
Chicago, Ill.	18	21
Canadaigua, N. Y.	13½	16
Des Moines, Ia.	37½	48½
Detroit, Mich.	15	18
Denver, Mich.	84	118
Dover, Del.	17	20
Buffalo, N. Y.	11	13
East St. Louis	22½	26
Hartford, Conn.	18	21
Indianapolis, Ind.	17	19½
Louisville, Ky.	18	21
Montpelier, Vt.	21	24
Minneapolis, Minn.	32	42
New York	16	19
Norfolk, Va.	20	24
Natchez, Miss.	32	61
Portland, Me.	18	21
Providence, R. I.	18	21
Philadelphia, Pa.	15	18
Richmond, Va.	20	24
Rochester, N. Y.	11½	13½
Syracuse, N. Y.	13½	16
St. Louis, Mo.	22½	26
Terre Haute, Ind.	18	21
Topeka, Kas.	54½	68
Trenton, N. J.	16	19

FINISHED PRODUCTS.

Finished Steel Products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire, nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—

Albany .....	.16
Buffalo .....	.11
Boston .....	.18
Baltimore .....	.14½
Canandaigua .....	.13½
Cleveland .....	.10
Columbus .....	.12
Cincinnati .....	.15
Chicago .....	.18
Harrisburg .....	.14½
Louisville .....	.18
New York .....	.16
Norfolk .....	.20
Philadelphia .....	.15
Rochester .....	.11½
Richmond .....	.20
Scranton .....	.15
St. Louis .....	.23
Washington .....	.14½

To Pittsburgh from—

Mahoning and Shenango Valleys..	.05
Wheeling .....	.05

COAL.

Coal Rates from Mines—

To Ashtabula	\$1.00
To Allegheny, Pan'dle Ft. W. trk..	.43
To Allegheny, West Penn tracks..	.48
To Allegheny, B. & O. ....	.35
To Pittsburgh, P. R. R. Main Line..	.43
To Pittsburgh, B. & A. V. Div..	.48
To Pittsburgh, B. & O. ....	.33
To Valleys .....	.70
To Buffalo	1.25
To Cleveland	1.00
To Detroit	1.40
To Chicago	1.90
To New York, gross ton	2.25
To Philadelphia, gross ton	2.00

From Freeport—

To Buffalo	1.10
For Lake Shipments— Cargo. Fuel.	
To Ashtabula .....	.88 .98
To Cleveland .....	.88 .98
To Erie .....	.88 .98

West Virginia rates from mines—

To Chicago	1.90
To seaboard points, gross ton	1.80

From No. 8, of Ohio—

To Cleveland .....	.90
To Chicago	1.65
To Detroit	1.18

Railroad Affairs Displayed for Manufacturers and Shippers

NEW YARD WORK FOR PITTSBURGH DISTRICT.

Anticipating terminal congestion the coming fall, the railroads are pushing work for increased yard room in the Pittsburgh district. The contract was let within the past week to the American Bridge Company for 1,800 tons of structural work, for the new Wheeling & Lake Erie shops at Brewster. The Pittsburgh & Lake Erie engineers are figuring on new yards at Newell, south of Pittsburgh, where the General Chemical Company is building a new plant that will cost about \$3,500,000. For the present the yards will be comparatively small, but eventually the company will have its principal yards south of Pittsburgh and its branch repair shops located at that point.

The new terminals at Brewster, eight miles south of Massillon, O., are now in shape for use. The elimination of a grade west of Massillon by the construction of a cut-off, is responsible for the change. By the first of the month the 50 acres at Massillon, known as the Columbia yards and covered with the roadhouse, machine shops and office, will be as bare as a desert. Structures not too large are to be loaded on flat cars and taken to Brewster. The switch tracks will be torn up for relaying at the new terminal. All that will mark the site of the yards in a month will be the mounds of ash ballast that once held in place the tracks.

Massillon became a division point of the W. & L. E. when the road was built in 1882. It was doomed four years ago, when the Gould interests decided to build the cut-off. The work, temporarily delayed, was resumed last year.

The Baltimore & Ohio is planning more new buildings to be erected in connection with the new terminal at Benwood Junction. The machine shop will be 60x90 feet, storage room and office building 30x70 feet, and the roundhouse will be 90 feet in diameter.

Bids for this work will be invited within the next 10 days and work is to be started the latter part of next month. The engineering department of the railroad will look after the work of laying tracks and will have charge of the grading.

This is a portion of the terminal work that has been outlined by the Baltimore & Ohio and which is to be completed during the next few years. The freight and passenger business over the main line has reached such proportions that the company has been obliged to almost

double the number of locomotives and cars. As a result larger terminals are needed at practically all the larger tonnage producing centers. The first work of this character is to be taken up at Benwood Junction, and by this time next year the company will have completed plans for other terminal improvements.

The Benwood Junction buildings will be of brick and steel, and will be absolutely fireproof, and the improvements at the place will cost several hundred thousand dollars. The officials say the new buildings must be completed shortly after the first of the year.

Improvements planned by the Pennsylvania at Greensburg, Pitcairn, and Erie call for terminal work that will cost \$4,000,000. Bids are to be asked the coming week for improvements at Greensburg, to cost \$1,000. Two additional tracks are to be run through Greensburg, a tunnel will be removed and the grade of one per cent will be cut down a half. The tunnel in question is under Main street, Greensburg, and is 275 feet long. In connection with the work at Greensburg, the railroad is to construct an undergrade connection between the main line and the Southwest branch. This will eliminate the crossing at grade of the eastbound tracks by Southwest branch trains.

The Pennsylvania Railroad has practically completed its four-track line from Pittsburgh to New York, but at several places there are short stretches of two and three-track road. These gaps, however, are being rapidly removed by the construction of additional tracks.

Additional capacity is to be provided at the Pitcairn yards, east of Pittsburgh. These yards are used principally for the classification of high-class freight. Instead of reclassifying the freight at Altoona and Harrisburg, it is sent direct to Jersey City, and the only change that is made is when it reaches the terminal points in the change of the crews.

The Pitcairn yards have cost the Pennsylvania upwards of \$3,000,000, including real estate. When the yards were completed three years ago the officials believed that it would not be necessary to increase the capacity for 10 years at least. During the last few years business has reached such proportions that the question of increasing the capacity of the yards about one-third has been taken up and it is likely that the work will be completed by this time next year.

Extensions are to be made later to the Pitcairn shops on account of the increased work in that department.

UNION STATION PROJECTS.

Chicagoans are pushing negotiations with the railroads on the new Terminal station project. The civic improvement plan is being urged, which contemplates a great passenger terminal in Twelfth street. This idea will be considered thoroughly, it is asserted, before the Union station question is settled. Railroad interests in the Union station are the Pennsylvania, including the Fort Wayne and Panhandle division; the Chicago & Alton, the Chicago, Milwaukee & St. Paul, and the Chicago, Burlington & Quincy. The proposed site is between West Madison, West Van Buren and Clinton streets, and the river.

During the week Ex-Governor Edwin Warfield, of Maryland, conferred with President McCrea, of the Pennsylvania, in regard to the proposed new Union station at Baltimore. It is understood that Mr. Warfield was assured that plans for the new station were being prepared, and that work could be started at an early date.

Illinois Central officials and engineers visited Louisville during the week to make final arrangements for the erection of a new depot at the foot of Seventh street, to replace the one destroyed by fire. It is understood that the new station will cost in the neighborhood of \$700,000.

To relieve congestion of Memphis yards and take care of rapidly increasing freight traffic to and through Memphis, the St. Louis & San Francisco has contracted for yards at Marion, Ark., just across the Mississippi River from Memphis. The ground, has been purchased, embracing many acres of cotton plantations.

One contract has been let to a St. Louis company for part of the construction. The improvements will cost \$200,000, embracing half a dozen of more roundhouses, a cinder pit of concrete, cottages for the railroad colony and a hotel for employees.

FREIGHT TRACTION LINE.

The Clarion & East Brady, (Pa.) Electric Railway Company has received a charter for the construction of its proposed trolley line connecting Clarion and East Brady. The road will be operated for freight as well as passengers. The power furnished will be sufficient to run through passenger cars and trains made up of 20 loaded box cars. The road is expected to connect ultimately with the Pittsburgh & Butler.

REPAIRING CARS FOR COMING RUSH.

The Pennsylvania is repairing at least 5,000 badly worn cars in anticipation of a car famine. About 1,500 cars of various types are being repaired at the Harrisburg shops alone. Many cars that have been stored along the sidings for months and are not fit for service are being sent to the shops.

Most all of the wooden coal cars have been weeded out during the past two years and have been either destroyed or sent to the various terminals where they are used for keeping company coal. The steel gondolas are being emptied as rapidly as possible and sent back to the mines, where they are loaded again. In this way it will be possible to keep enough cars in service so as to meet the increasing demand for the steel gondolas.

The work of car repairs in the East Hollidaysburg yards is being increased almost daily, and in the neighborhood of 200 additional men have been put to work at that place during the past two weeks.

FOR BELT TROLLEY LINE.

With 2,000,000 at hand for extensions, the Pittsburgh, McKeesport & Westmoreland Street Railways Company awaits only the granting of a few small rights of way before starting work on a belt line that will include Irwin, McKeesport, Monongahela valley towns as far up the river as Monessen, across the country to West Newton and into Irwin. The project includes the erection of two costly bridges, the contract for one of which at Irwin has been let to the Pennsylvania Steel Company. This bridge will cost \$30,000. The road, Manning Stires, president of the company, says will tap 50 towns with an aggregate population of 140,000 and will cover 65 miles.

Officers of the company are: Manning Stires, president; I. I. Robertson, of West Newton, vice president; Geo. D. Cook, of New York, treasurer; C. C. Loder, of McKeesport, secretary.

IDAHO LEADS IN CONSTRUCTION.

In published reports of Mr. Harri-man's interviews on his arrival in this country, he refers specially to the railroad construction work contemplated in Idaho. It is said that in no State in the Union is railroad building going more extensively than in Idaho. The big irrigation projects which have been undertaken in Idaho have turned thousands of acres of arid land into choice farming

land, and as this becomes settled, the need for more railroad accommodations increases.

The Oregon Short Line has awarded contract to the Utah Construction Company for a 75-mile cut-off from Rupert to Bliss. A road also will be built from Burley to Oakley. Good progress is being made on the line from Twin Falls to Wells, Nev., where it will connect with the main line of the Southern Pacific Railroad. Other lines now under contract include a new road from Moreland to Aberdeen, northwest of Pocatello, on the Snake Valley line. Surveys have been made for a cut-off from a point 20 miles west of Ogden on the Ogden-Lucien cut-off to Rupert.

NEW NAVIGATION LINES.

It was announced in Charleston, W. Va., last week that the Secretary of State of West Virginia has granted a charter to the Kanawha & Ohio River Transportation Company, with a capital stock of \$1,200,000. Pennsylvania capitalists are interested in the company although the names given in the articles of incorporation are eastern residents, who are said to control a large acreage of undeveloped coal fields.

The incorporators are: Thornton J. Theall, Howard C. Dick, and C. J. S. Dereve, of New York, and A. B. Wordemann, of Hoboken, N. J. The company will operate boats on the Great Kanawha, Ohio, and the Mississippi rivers.

In this connection it is reported that a force of United States engineers is now surveying the Little Kanawha, with a view of making a report as to the feasibility of constructing locks and dams at points where it is now not navigable, to open the coal fields of some of the interior counties of West Virginia. These fields are not now reached by any railroad.

Barge Line for Mississippi.

Reports from Little Rock, Ark., say that St. Louis men, led by Arthur N. Sager, have been feeling sentiment among shippers there, in the interest of the proposed \$10,000,000 corporation to operate a packet and barge line on the Mississippi River from St. Paul, Minn., to New Orleans.

Sager is discussing with business men the proposition to incorporate a company, and 200 of the leading financiers of the country will be the incorporators, he says. One hundred have already indicated their intention of entering the corporation.

It is the intention of this company to put on the Mississippi River and its tributaries such boats as will carry

freight at all times of the year, regardless of the depth of the water. Light-draught steel-hull boats of German type will be employed. They will vary in capacity from 500 to 1,000 tons. The draught line will be from 27 to 60 inches.

Sager is the legal representative of William K. Kavanaugh, president of the Deep Waterway Association, of St. Louis.

NEW PITTSBURGH TERMINALS.

The Pennsylvania Railroad Company has abandoned its plans for the proposed \$2,000,000 freight terminals along the Ft. Wayne elevated tracks between Federal and Anderson streets, Northside, Pittsburgh, and is securing options on the necessary property for freight stations and warehouses near the waterfront on the Allegheny side of the Ft. Wayne bridge. Engineers are now working on the new plans, estimating the cost in the neighborhood of \$3,500,000, including property.

The Northside terminal will be similar to the Point freight terminal, Pittsburgh, which was built for about \$4,000,000. The Northside terminal will cover two squares and will extend from Church avenue to Washington street and from Cedar avenue on the west, to Madison avenue on the east. Options are now being taken on the property bounded by these thoroughfares.

START TROLLEY BUILDING.

All franchises having been obtained, work of building the projected Jefferson & Wilson Street Railway through the Monongahela Valley is to be started at once by a syndicate of New York and Buffalo capitalists, headed by Van Horn Ely, president of the Ohio Valley Scenic Route. Arrangements already have been made by the Ely syndicate for the financing of their new proposition, which will involve an expense of over \$600,000.

A heavy steel bridge will be erected over the Monongahela River from the upper end of Glassport to the lower end of Wilson and the new line will be built from a connection with the Pittsburgh Railways Company's tracks in Glassport across the Monongahela to Wilson and Clairton. This connection in Glassport will permit the operation of through cars from McKeesport to up-river points.

It is the intention to start building the road within the next 60 days. Next spring extensions of the new line will be made to other points along the Monongahela River.

Try a Want or For Sale ad in the Industrial World.

BETTER FREIGHT SERVICE FOR MAHONING VALLEY.

In addition to the large sum of money to be expended by the Pennsylvania lines, the Baltimore & Ohio and the Pittsburgh & Lake Erie, for the elimination of grade crossings in Youngstown, engineers employed by the Pittsburgh & Lake Erie, the Lake Shore, Erie & Pennsylvania, are considering plans for the building of a large joint freight and passenger terminal.

The building of the Lake Erie & Pittsburgh and the Lake Erie & Eastern, jointly by the Pennsylvania and the Pittsburgh & Lake Erie, is said to be the first step toward the erection of a big terminal to be used jointly by all roads. Both the Lake Erie & Pittsburgh and the Lake Erie & Eastern will make connections with existing lines at Youngstown.

Practically all of the right of way for the Lake Erie & Eastern, for which a franchise was granted recently by Youngstown councils, has been acquired and the executives have approved plans for the new line. At the general offices of the company in Pittsburgh it was stated that it has not been definitely decided when actual construction is to be started. Funds for this work have been authorized, and it is likely that some of the preliminary work will be taken up this fall.

It is officially stated that the building of the Lake Erie & Eastern will mean a big change in the location of the Pittsburgh & Erie main line west of Struthers, giving better connection with the industrial plants of that section. About \$5,000,000 will be required to build the Lake Erie & Eastern, according to official figures, and half of this expense will be borne by the Pennsylvania. The new line will be operated jointly by the two roads.

Practically every freight car owned by the Wabash-Pittsburgh Terminal Railroad is in constant service on account of the heavy tonnage between Pittsburgh and the lakes. Only a few cars are handled empty in either direction, the northbound cars carrying coal and finished material, while the southbound cars are loaded with ore for the big blast furnaces.

A few months ago the Gould Pittsburgh road received 500 steel hoppers from the Standard Steel Car Company. All of the new equipment is in service and a large amount of new equipment will be ordered as soon as the receivership is lifted. Plans for turning the property back to stockholders have practically been agreed upon, and it is expected that the receivership will be terminated in a few months.

Latter-Day Economies in Cupola Melting

By J. W. Henderson.*

THE mere melting of iron in a cupola is a simple operation. To get the highest efficiency out of raw materials and the necessary equipment, and convert these raw materials into metal most suitable for the work in hand, is another matter.

Although not fully realized by foundrymen in general, there is more to the cupola melting of iron and to economic production of castings from cupola metal, than the mere bringing together in a cylindrical stack lined with bricks, certain quantities of fuel and iron at varying temperatures.

Primarily the engineer is interested in the plant arrangement and equipment and their relation to economic production. As the engineers' work consists in planning the relation of the parts of the foundry to the whole scheme, with a view always to efficiency, he must be interested in all factors that assist or retard this result. In this discussion we are considering factors of economy involved in the conversion of pig iron, scrap, etc., into good castings. Examination of a large number of plants in many states, discovers some of these important factors as follows:

1 degree—Relation of the receiving track to the ground and building plan. This is important on account of required storage room for raw materials, space for scales and narrow gauge yard tracks, and means for properly handling the charges of fuel and iron.

2 degrees—Weighing facilities that will require careful weighing of each complete charge of a separate unit. This is a sadly neglected part of the equipment in most foundries. A few of the general practices will be mentioned later.

3 degrees—The elevator should be placed, in relation to the position of the cupola, so that the maximum loads of fuel and iron charges can be handled with the least interference with the operations on the charging floor.

4 degrees—The charging room capacity in smaller foundries should be sufficient to carry the charges for the total heat, and in larger foundries adjusted so that the immediate cupola laborers will need the minimum assistance.

* Foundry Specialist, Gulick, Henderson & Company. Paper presented at the regular meeting of the Engineers' Society of Western Pennsylvania, and published in the July, 1909, proceedings of the society.

5 degrees—Cupola details. Those of importance are:

Extension of the spout into the foundry.

Height of spout above the foundry floor.

Depth of cupola from sand bottom to charging door.

Dimensions of charging doors and the distance between the doors and the charging room floor.

Capacity of the cupola, when lined to its largest inside diameter with safety, always in advance of shop requirements, and with blower or fan capacity and adjustment within a range that will permit the melting speed to be as elastic as the needs of the shop might demand.

These engineering details of plant arrangement and equipment not only influence economies, but they also assist or hinder systematic operations and accuracy.

Many years' experience convinces that those engaged in chilled iron work, such as cast iron car wheels, and those making malleable iron from the cupola are to be credited with most of the present development of cupola practice in this country. This has not been on account of their greater intelligence, necessarily, but rather a matter of compulsion. For example consider car wheel iron. When the metal is running close to the lowest limit as to chilling qualities, if the silicon content increases .05 per cent the chill on the wheels will drop below the specification limits, and the wheels made therefrom will be bad so far as their acceptance by the railroads is concerned. If one such wheel among a lot of a hundred, is found by the inspector, he will reject the whole lot even though the other ninety and nine might be known to be all right in every way.

Cupola melting of iron is simple until you give personal attention to the actual running of a cupola and try to produce accurate results as to temperature, composition, chill, strength, shrinkage, etc., in any given kind of castings. Some varied experiments may be of interest.

Cupola A.—Sand bottom to charging door, 17 feet; diameter straight lining, 45 inches; diameter of melting zone, 38 inches. Cupola started with 1,500 pounds bed coke for 1,500 pounds first iron charge. This was varied to 1,800 pounds bed coke and 2,000 pounds first iron charge, but good, very hot, iron was not obtained under good control until the bed coke was made 2,000 pounds and the first iron charge increase to more than double this or 4,400 pounds. Afterward it was common practice to take out of

this cupola at each heat, four different mixtures varying in silicon from .75 per cent to 2.50 per cent. Although no extra coke was used to divide them, the four mixtures were produced each day, with the desired differences in composition and separated from each other.

Cupola B.—Diameter varied from 49 inches to 69 inches and depth from charging door to sand bottom was 9 feet 6 inches. Weight of pig iron was taken by considering an average weight for the pigs and making up the charges by counting them. Weight of the scrap was left entirely to the guess of the head charger. Charges were supposed to be 4,500 pounds each and were so shown on the records, but on checking up the work being done, and allowing 50 pounds as the average load carried each trip of the men from the scrap pile to the cupola, it was found that the charges would vary from 3,500 pounds to 4,200 pounds. The coke was forked into the cupola until it reached a measured distance from the charging door. At 25 pounds per fork found that the total bed coke would amount to 3,400 pounds. After taking up melting on the chemical basis these conditions were changed.

Cupola C.—Making very thin and small special castings requiring very hot iron of uniform composition. Cupola was 50 inches diameter and 14 feet in depth. Coke and iron charged in barrows. At one time they found the average barrow load of coke to weigh 120 pounds, so this was still being used to determine quantities charged. When on hand to check up the actual conditions was told by the man in charge that the bed coke each day consisted of 1,800 pounds, made up from 15 wheel barrow loads. Weighing all barrow loads discovered that the total bed actually weighed 2,600 pounds. Upon this was put iron charge of 2,500 pounds. Single charges of coke varied throughout the heat from $3\frac{1}{2}$ to 5 barrow loads. The product varied in quality with the "luck" which they had in striking the right conditions. To-day this shop is securing very hot iron of uniform quality continuously.

Cupola D.—Making special chilled work. Melting rate was too slow for the enlarged shop. Cupola 58 inches diameter. With single charges of 4,000 pounds each the output was 8.5 tons per hour. Increasing the charges of coke and iron, but reducing the then coke charge gave a melting rate of 9.5 tons obtained per hour. Thus hotter iron of more uniform composition was obtained, at an increased rate of one ton more per hour. The best results were obtained with the iron charges amounting to 7,000 pounds each. It will be well to say here that the character of the raw materials, the diameter

of the cupola, and means for mixing the iron after it is melted, must be considered in determining the size and weight of the iron charges.

Referring again to conditions similar to cupola B given above, I will state that where any attempt is made to make up the charges by weight the proceeding is usually somewhat as follows: Scrap, and the iron by brands, are taken up an incline in wheel barrows, and piled in the charging room. From these the charges are made up piece meal on a scale too small to hold a complete charge, and the assembled charge is again piled on the charging room floor. Once more this metal is handled and thrown into the cupola through a door that is above the waist line of the men.

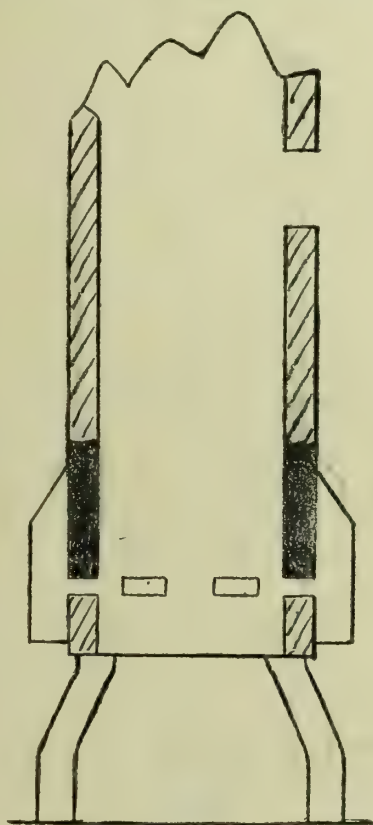


Figure 1.

Altogether the metal composing the charge is handled five times at least.

The coke is also taken into the charging room by barrows and from the piles thus formed is charged by wire, or solid metal basket, or by fork. It is a common thing to find records being kept that show 45 pounds as the basket load when 40 pounds is correct, or vice versa, and 18 pounds to the fork when 25 pounds should be the weight shown.

The blower and the fan. Here is the case of a shop melting 400 tons per day. The shop had been increased so that the requirements were beyond the capacity of the power plant, and it was necessary to enlarge the latter or conserve energy at some point. The No. 10 fan

was thrown out and a blower put in its place with the result of saving 35 horsepower and still being capable of doing more than was being accomplished with the fan. There is another case of a continuous shop driving fans to their fullest capacity, and having considerable trouble to keep belts on them. Here the blower saved over 30 horsepower besides removing all belt troubles.

There are five distinct outlines of cupola linings shown in the accompanying illustrations. Eliminating the straight and the burned out linings as shown in Figures 1 and 2, if I were asked which of the remaining three is the best, I would not give direct answer. Each of them is good under certain conditions.

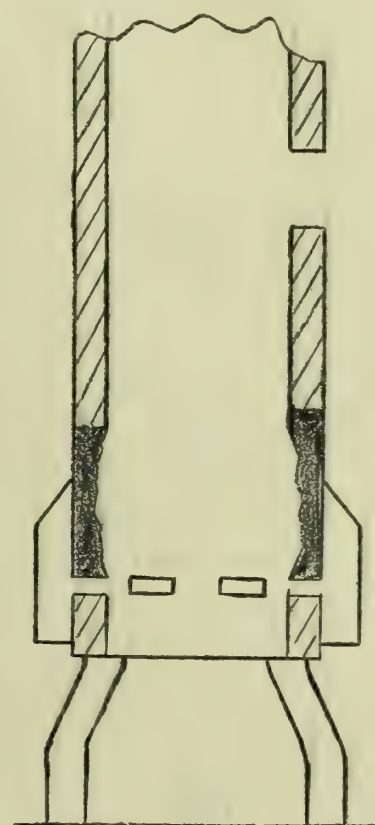


Figure 2.

That shown in Figure 3 will be found the most serviceable generally. It is quite important where the point of the bulge is placed. If properly used this bulge will prevent the bunging up of the tuyeres, daily patching of the lining, and will aid the temperature without materially reducing the melting rate.

The arrangement shown in Figure 4 permits carrying a very thin lining above the bulge. It is also possible with this lining to carry iron bricks in the lining for several rows below the charging door. With this bulge and the thinner lining above it the cubic capacity can be increased, the quantity of bed coke decreased, while reducing lining repairs and increasing the temperature of the

metal. However, with this bulge the charges cannot be melted in their regular order.

The outline shown in Figure 5 is the best for obtaining uniform temperature, oxidation and melting. The dimensions should be maintained within one-half inch variation each day. This requires patching before each heat. There is no question but that the gain in quality of product is worth the trouble and expense. Only with this style of lining, can accurate melting points be discovered after each heat, that will indicate just how regular the charging has been done. Except for very long heats the melting point can be established by the method of burning the bed coke.

the entry of a chemist into his foundry cost him \$10,000. Where the chemist who is also an experienced foundryman, has not the co-operation and assistance of the officials and those in direct charge of the cupola and foundry, the results from mixing by chemical analysis will be negative. The chemistry part of it bears about the same relation to the results that the bookkeeping in the establishment bears to the profits at the end of the year.

Again, the chemical analysis of the materials may be perfect, and the weighing of the charges may be accurate, yet the resulting metal from the cupola may be made almost worthless in the operation of melting. Or if these things are

order to get the chill and strength." "Nothing will close up the grain in cylinder castings like old car wheels." And so it goes with the foundrymen visiting conventions, listening to and reading the educational papers, still clinging to the ways of the past century. It does not make any difference what kind of castings you are making you cannot to-day get away from the benefits derived from chemistry and metallurgy, and generally better castings at lower cost will be made by employing these in your foundry. Blast furnace practice is not what it was 20 years ago. In those days if the silicon percentage dropped a given number of points the chemist on the particular fur-

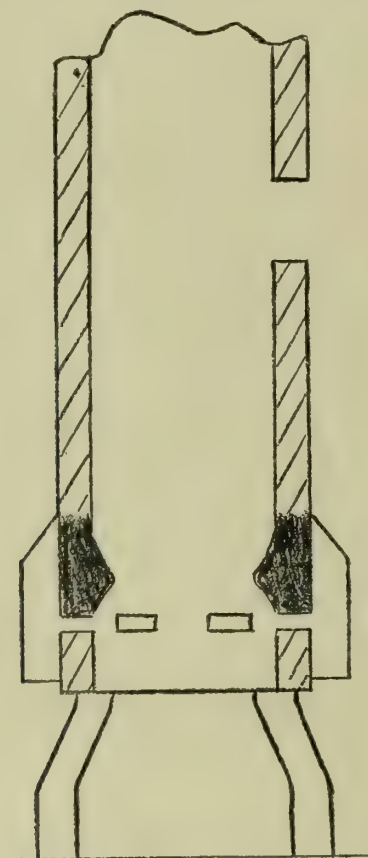


Figure 1.

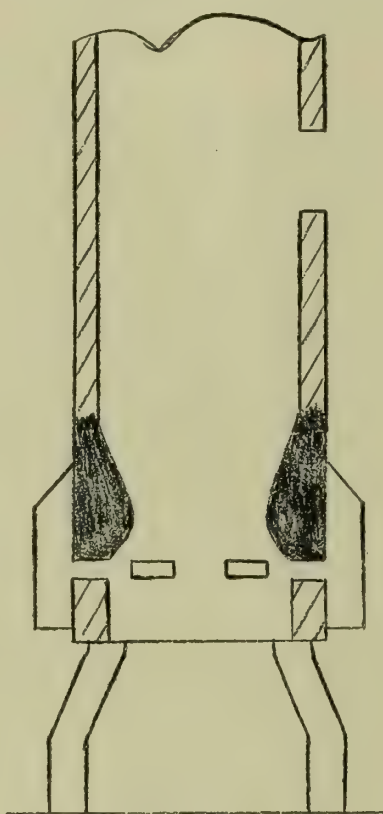


Figure 2.

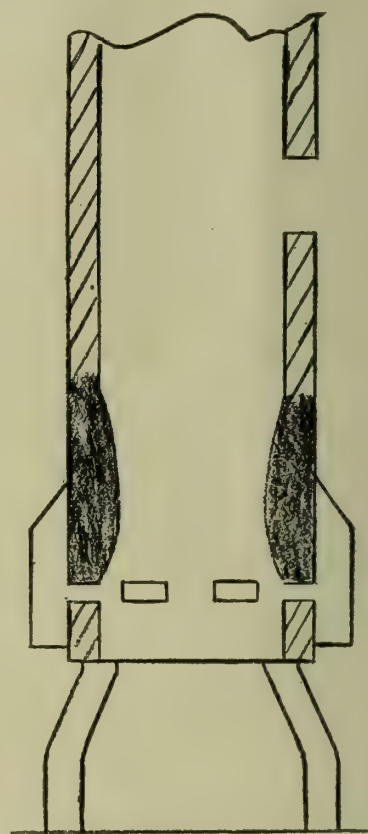


Figure 3.

There are, of course, many modifications of these outlines. As a rule too little attention is paid to the cupola lining and its effect upon temperature and the melting rate.

To accomplish the best results, the mixing by chemical analysis is not merely the province of a chemist. As a matter of fact, where the chemist is only a chemist and not a foundryman, and no one else in the shop is acquainted with chemistry or metallurgy, the chances for definite improvement are doubtful.

This will account for the sad experiences of some few of the foundrymen in this district. There is in mind one proprietor in particular who claims that

carried on as they should be, still the castings may be bad from the way the metal is handled and poured, and in special cases in the manner of cooling or shaking out, or in the annealing of the castings.

To the practical chemist and metallurgist the "brands" of iron, as brands, means nothing except as the name stands for composition and structure. Notwithstanding demonstrated facts which disprove the following claims, it is not an uncommon thing to hear foundrymen express themselves as follows: "Don't the steel go into the sand bottom?" "Don't stove plate go up the stack or out with slag?" "We have to have charcoal iron in our castings in

nace output, could know that there would be an increase in the sulphur content and almost what the percentage would be. A few years later the same blast furnaces were making low silicon iron containing lower sulphur than was thought possible from coke iron furnaces.

Whether making stove plate or ordinary machine castings, automobile cylinders, semi-steel castings, or any other kind, after once determining the composition and at what temperature the best of these has been made, the desire should be to duplicate them continuously. You cannot be confident of duplicating castings day in and day out, and take advantage of the market changes

in iron and fuel, without chemistry and metallurgy.

Here is the analysis of six pigs taken from the same car load of a well known brand of iron. Silicon, .87, .99, 1.62, 1.70, 1.79 and 1.82 per cent. Chemistry obtained a rebate on this iron, enabled the foundry to use it without loss of castings and prevented future shipments of such mixed iron from the same source to this foundry. Without chemistry the resulting bad castings would have been charged to the coke first, and if that was found not guilty then to anything but this particular brand of iron which had been used theretofore without loss of castings attributable to it.

Knowing these things and that there are frequently even greater variations in analysis between different car loads of the same brand of iron, it is not difficult to realize the lack of uniformity in the castings produced where several hundred car loads of iron are thrown together in one pile. When a number of such piles are found on the property of concerns (generally favorable to scientific methods) the marvel increases.

To be successful, mixing by chemical analysis must be supplementary to that experience which is familiar with general cupola practice and the effect on the results desired, of every operation from the raw materials to the loading of the finished castings for shipment. Given the chemical analysis and applying the personal attention, many foundrymen might work out the results themselves. System in the laboratory has brought the cost of analysis within the reach of even the smallest foundry.

As indicating what is being accomplished, attention is called to the analysis of test pieces from three plants in different parts of the country:

Foundry No. 1.

Test Piece.	Sil.	Mang.	Sul.	Phos.
No. 1	2.39	.57	.088	.632
No. 2	2.36	.58	.076	.612

Same plant, same kind of castings one year later.

Test Piece.	Sil.	Mang.	Sul.	Phos.
No. 1	2.25	.53	.074	.636
No. 2	2.23	.50	.064	.632

Foundry No. 2.

Test Piece.	Sil.	Mang.	Com.	Car
No. 1 .....	.55	.53		.61
No. 2 .....	.52	.57		.59
No. 3 .....	.54	.51		.60

Same plant, same chilled work several months later.

Test Piece.	Sil.	Mang.	Com.	Car
No. 1 .....	.49	.57		.60
No. 2 .....	.55	.64		.54
No. 3 .....	.55	.49		.58

Foundry No. 3.

Test Piece.	Sil.	Mang.	Sul.	Phos.
No. 1	2.54	.46	.070	.720
No. 2	2.44	.49	.080	.690

Same plant, same kind castings one year later.

Test Piece.	Sil.	Mang.	Sul.	Phos.
No. 1	2.42	.51	.067	.778
No. 2	2.32	.49	.074	.780

While maintaining this uniformity the castings are being produced at lower mixture cost than before and the casting losses chargeable to the metal are reduced to a minimum. One more point is that of a company which at the beginning of the financial depression, found itself with several hundred tons of iron on hand not suitable for the castings to be made. Business policy dictated buying as little iron as possible at that time and this was accomplished by the chemical analysis indicating just what the minimum amount of iron would have to be composed of to dilute the elements which were too high and what to make up for those elements which were too low, in the stock already on hand.

Advancement in any branch of the iron industry moves in two lines generally parallel to each other though often converging, the one scientific and the other practical. With cupola melting considered so simple that any man with a few hundred dollars can engage in the business with hope of reward, and with cupola practice in the chaotic condition in which we find it to-day in even many of the large foundries, advancement in economical melting along either scientific or practical lines needs necessity to give it movement.

Fundamentally, the small manufacturer cannot take advantage of, and the large one will not introduce, the latest methods affecting economies or a higher standard, worked out by the application of science to practical purposes.

Neither will concede the time to give the application of new methods the personal attention they require and deserve. Foundrymen will run after some new improvement in cupola design, or the suggestions for changes in the size and weight of the iron and fuel charges, when the same amount of time and personal attention given to the devices and materials they now have would yield large returns in economies to be added to the profits at the end of the year. Ask nine superintendents out of every 10 the following questions and see if any of them can promptly answer them correctly:

1 degree—What are the inside dimensions of your cupolas

2 degrees—What are the inside dimensions of your tuyeres?

3 degrees—What is the actual ratio of coke to iron of the bed charge?

4 degrees—What is the actual ratio of coke to iron of the other charges

There is in mind a man 75 years of age whose story is a lesson and an example. After stating that he started in the foundry business in 1870 he was asked, "Well I suppose you have made yourself rich from it in the meantime?"

His answer was, "No, I'm poorer than when I began."

We have had combinations in seemingly all lines except that of the grey iron foundry business. It would seem that here is an opportunity on account of the possibilities for economies in all departments, but particularly that of cupola melting. We are never dealing with ultimates. Advancement lies in getting the most of the so-called elements that are in the raw materials at hand in any given locality. Europe has been compelled to be in advance of us in cupola practice. We will find that better malleable can be made in the cupola than has been the experience in the past, and that grey iron in all its branches, including what is called semi-steel, can be produced within definite and somewhat narrow limits as to tensile and transverse strength, chill, wear, deflection, etc. It is an easy matter to-day to make grey iron with tensile strength 24,000 pounds to 30,000 pounds and semi-steel with tensile strength 36,000 pounds to 42,000 pounds per square inch. There is an unconfirmed report of an eastern concern producing semi-steel with tensile strength in ordinary test bars over 48,000 pounds. The likelihood is that competition, and combinations of capital, and increased cost of raw materials, will do more toward economies in this branch of founding than all the inherent intelligence or present standards of excellence.

\$5,000,000 PIPE LINE FOR OKLAHOMA.

A right-of-way for an 8-inch pipe line through Eastern Oklahoma on its way to Baton Rouge, La., is being secured by the Standard Oil Company, of Louisiana, subsidiary of the Standard Oil Company. The pipe line starts at Kiefer, Creek county, and will have branch lines touching various fields. Including the pumping stations and laterals, it is estimated that it will cost \$5,000,000 to construct this line. It is to be completed in 1910. It is understood that this company, operating under a charter secured in Louisiana, will domesticate in Oklahoma in accordance with the Yeager-Strain law, passed by the recent Legislature. By domesticating the company will avoid interference by Attorney General Charles J. West, and other State officials, who last year blocked an attempt by the Prairie Oil & Gas Company to build additional pipe lines without domesticating.

An additional oil refinery is immediately to be built in Okmulgee by the Prairie company, to build its own pipe lines and to handle a large amount of its production. Okmulgee is becoming one of the first of the important shipping points for crude oil in the State.

Wanted, For Sale, Bargains, Etc., in Brief.

POSITIONS WANTED.

Drawings—Structural and mechanical designs and details. Moderate prices. Address Box 126 Industrial World.

Civil Engineer, 20 Years Experience, desires position as locating or resident engineer; also familiar with drainage work; A1 reference; have instruments. Address Box 43, Amboy, Ill.

Foundry Foremen and Others wanted to increase their earning capacity 25 to 50 per cent, by taking a course in the mixing of irons with the Milwaukee Correspondence Schools, Goldsmith Bldg., Milwaukee, Wis.

A Position as Manager or Superintendent; age 29; a graduate Massachusetts Institute of Technology; at present in charge of a boiler plant with an annual output of nearly 100,000,000 K. W. H.; reasons for desiring a change; 12 hours per day, 365 per year. Address Box 4, Darlington, Mo.

WANTED.

Situation—An experienced accountant, correspondent and general office man, accustomed to handling men and accounts, desires position where energy and attention to details will merit recognition. Address Postoffice Box 194, Northside, Pittsburgh.

Wanted—Attention, manufacturers. An old-established rolling mill, whose output is high grade bar iron, and black and galvanized sheets, and having ample ground in Pittsburgh district, would be interested in having located on their ground manufacturing adjuncts that use above materials. Parties engaged in manufacture of trade articles from above materials, who contemplate change of location, or engaging in new enterprises, can address office of the Industrial World, Pittsburgh, Pa., giving full particulars as to tonnage used; space desired, etc.

Wanted — A second-hand 15 or 16 h. p. stationary gas engine. Address Norwood Machine Company, Cincinnati, O.

Wanted — Manufacturers wanted to build cold rolled shafting machinery on royalty basis, under United States patent No. 895,364, dated August 4, 1908, described in the Industrial World December 28, 1908. Address John S. Griffin, Roslyn, Washington.

SEALED PROPOSALS.

Machines for Tabulating Agricultural Statistics. — The Director of the Census is considering various types of machines with a view to determining the one best adapted for tabulating the agricultural statistics of the Thirteenth Census. Any one possessing a machine adapted for this purpose is invited to present the

same for test in practical operation at the Bureau of the Census, Washington, D. C., on or before July 31, 1909. For further information address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

Sealed Proposals will be received at the office of the Director of the Census, Washington, D. C., until 2 o'clock p. m., August 9, 1909, and then publicly opened. For furnishing all the labor, materials, and work necessary for the construction in lots of 60, 75, 100, or 125 tabulating machines and delivering the same complete, free of all charges for transportation, at the Census Building, Washington, D. C. right is reserved to accept or reject all bids in whole or part, to strike out any item or items in the specifications, and to waive any defects. For specifications, blueprint drawings, blank proposals, and full information, address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

FACTORIES WANTED.

Factories Wanted — Grafton, W. Va., will give to manufacturers, a free site on railroad siding, with shipping facilities in all directions, five-cent gas, and an inexhaustible supply of soft water and coal. For information, address Secretary, Grafton Board of Trade.

MANUFACTURING SITES.

Manufacturing Sites — Free, on railroad and Ohio river and street car line; cheap gas; cash bonus given to good mills, factories and shops. Special facilities for sheet and tin mills. Address Paden City Land Company, 45 South Twentieth street, Pittsburgh, Pa.

FOR SALE.

For Sale—Several power generators with their engines and switchboards, lighting generators, hoisting engines, mine wagons, air compressors, feed water heater, steel head frames and bins. All this apparatus brand new at manufacturers' shops. Owing to contracts for this equipment being placed 18 months ago, can sell same at lower prices than it can be purchased for today and can also give immediate delivery. Address Box 200, Industrial World, Pittsburgh, Pa.

GAS ENGINE AND GENERATOR FOR SALE.

One Westinghouse 13"x14" 3-cylinder gas engine, with usual fittings and dynamo igniting spark coil, connected by patented flexible insulated coupling to one General Electric Company direct current generator, type M. P., 6 piles, 100 K. W., 270 R. P. M., 250 volts, 400 amperes, guaranteed to stand 50 per cent overload for two hours and 100 per cent momentarily.

All in first class condition. Used only as spare. We are replacing with 500

horsepower gas engine of our own make, and 400 K. W. generator. For price and photograph address Mesta Machine Company, Pittsburgh, Pa.

For Sale — One second-hand 8x9" Chuse engine, direct connected to 15 k. w. Triumph generator; good condition. Electric Machinery & Specialty Company, 204 Franklin avenue, St. Louis, Mo.

For Sale—Rock Drill—Ingersoll make; motor, 1 h. p., complete; shafting, pulleys, hangers, belting, lathes, 1 drill press, cheap; boilers, engines, pumps. William H. Flynn Machinery Company, 404 East Second street, Cincinnati, O.

For Sale — Engines, lathes, shapers, drills, planers, milling machines and other machine tools. Examine our 18"x8" new latest improved lathe, for automobile shops, \$325. Also, latest improved B. G. crank shaper, \$250. Western Machinery Company, 828 West Sixth street, Cincinnati, O.

For Sale—One-fifth interest in an up-to-date manufacturing plant, building a line of special and patented machinery, and having a very extensive jobbing trade. Purchaser can secure a salaried position as engineer, chief draftsman, or salesman. Price of one-fifth interest \$10,000. Address Box 154, care Industrial World, Pittsburgh, Pa.

Machinery Bought, Sold and Repaired—Engines and boilers, all styles and sizes, both new and second-hand; machinery of every description for all purposes; also pulverizer and crushers. Write to me for anything you want. Gruendler Machine Company, 928 Main street, St. Louis, Mo.

For Sale—One 18x24" slide valve engine 2 66"x18" tubular boilers, 1 heater, 1 deep-well pump and 5 wood working machines; will overhaul and put in first-class condition, cheap; also, several direct current motors, 3, 5, 10 and 15 h. p., 220 volts. The Farrin-Korn Lumber Company, Winton Place Station, Cincinnati, O.

For Sale — Rolling Mill—The property known as the Seyfert Rolling Mill, consisting of Puddle and Plate Mills for making sheared skelp is offered for sale. Located about four miles from Reading, Pa., on the Wilmington & Columbia Division of the Reading Railroad. For particulars apply to Samuel R. Seyfert & Brother, Reading, Pa.

For Sale—51 feet 16 double belting, 40c per pound.
One 20-h. p. 500-volt motor.
One 10-h. p. 500-volt motor.
One 3-h. p. 220-volt, back-geared motor.
One 6x6 air compressor.
One 4x6 air compressor.
One 100-h. p. Corliss engine. American Electric Company, 1106 Cass avenue, St. Louis, Mo.

PRODUCTION OF TIN IN 1908.

By Frank L. Hess.*

The only tin ore produced in this country during the year 1908 was a few tons of stream tin sluiced from gravels in Seward Peninsula, Alaska.

The American Tin Mining Company produced a few tons of stream tin from Buck Creek. The ore, which was taken out while assessment work was being done, carried 69 per cent of tin, and was shipped to Hamburg, Germany, for sale.

Buck Creek is in Seward Peninsula, about 20 miles east of Cape Prince of Wales. It is a short creek, only about two miles in length, and has a comparatively small drainage basin. The snowfall of the winter of 1907-8 is said to have been light and the following summer dry, so that water for sluicing was not plentiful.

The tin-bearing gravels are comparatively shallow, from 3 to 10 feet deep, and the tin content is relatively high, 28 pounds or more per cubic yard.

The Bartels Tin Mining Company, which began prospecting in 1903, continued work on Cape Mountain, near Tin City, five miles southeast of Cape Prince of Wales. The company has a number of shafts and tunnels. The tin occurs in its mine as impregnation veins in granite.

The United States-Alaska Tin Mining Company continued driving a prospect tunnel, which was begun in the winter of 1905-6, to cut a vein found higher up on Cape Mountain, on which a 35-foot shaft had been sunk. The tunnel was 421 feet in at the close of the year. * * * Crim, Randt & O'Brien, just before the close of the season, washed a small quantity of stream tin from the gravels along Cassiterite Creek, a branch of ramite through Lost river, about 30 miles southeast of Cape Prince of Wales. They did some further prospecting upon their tin deposits, but no lode tin was produced. In the course of their prospecting a wolframite deposit through 3½ feet. Prospectors did some work on Brooks mountain close to the head of Lost river during the summer, but no finds of tin have been reported. Adolph Knopf, of the survey, discovered on Brooks mountain two new tin-boron minerals in 1907, to which he gave the names of paigeite and hulseite. They are not at present of economic importance. Paigeite was also found on Ears Mountain.

No work is known to have been done in the Caroline field during 1908. The tin-bearing area lies on both sides of the North Carolina-South Carolina line.

* Abstracts from advance sheets of "Mineral Resources of the United States for 1908," U. S. Geological Survey.

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in Cherokee county, S. C., and in Gaston and Lincoln counties, N. C. Cassiterite occurs as an original constituent of pegmatite dikes cutting gneisses and schists.

In South Dakota, at Tinton, in the northern Black Hills, the Tinton company remodeled its mill and expects to mine tin ore during 1909.

At Hill City, in the southern Black Hills, the Gertie Tin Mining & Milling Company was also engaged in remodeling its mill during 1908, with the hope of doing active mining in 1909.

The Black Metal Mining Company holds tungsten (wolframite) claims near Hill City that carry a considerable percentage of light colored cassiterite in quartz veins. These veins are in places more than a foot in width, and here and there contain handsome intergrowths of cassiterite, wolframite, and quartz. A considerable amount of development work was done on these claims during the year. No other operations on tin claims of the region, except annual assessment work, are known to have been carried on.

Neither development work nor production during 1908 has been reported from the tin deposits 12 miles south of Spokane, Wash. At this place also cassiterite occurs in pegmatite and is considered by A. J. Collier, who investigated the occurrence for the United States Geological Survey, to be probably an original mineral. It is accompanied by scheelite and wolframite.

The Florella Mining Company, which has tin deposits in the Franklin mountains 15 miles north of El Paso, did some development work during the year, but marketed no ore. Seven veins have been found upon its property, and the company reported a considerable amount of ore on the dumps. Placer tin has been found in the gulches near the veins. The deposits are replacement veins in granite and carry some wolframite with the cassiterite.

Tin in Foreign Countries.

At the time of writing (June, 1909) it is not possible to obtain the figures of production for 1908 of all the tin-producing countries, but as shown by exports the following table, compiled by C. Mayer, secretary of the New York Metal Exchange, gives the approximate output for the year:

	Short Tons. 1907	1908
Total shipments:		
Straits Settlements ...	58,800	67,760
Australia	7,112	6,552
Bolivia	17,136	19,040
South Africa		1,904
China	224	
Banka sales in Holland..	12,197	12,880
Billiton sales in Java ...	2,408	2,464
Production in Cornwall.	5,488	6,048
Total	103,365	116,648

From this table it is evident that, in

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spite of what are in many places considered low prices, there was a large increase in the total production of tin, and that the supply for 1908 was the largest year's supply in the history of tin mining. Australia and China are the only countries that showed a decrease. In the latter case a decrease of exports is not surprising, as it is ordinarily only in years of high prices that tin is drawn into the world's trade from Chinese sources. Little is known of the Chinese tin deposits.

The available figures showing the output of tin for 1908 are as follows:

	Tons.	Value.
South Africa exports..	2,361	\$ 555,467
*Fed. Malay states, ex.	56,935	
Tasmania, ore	5,063	2,051,619
Australia:		
N. S. Wales, ore	942	385,208
N. S. Wales, tin ingots	1,068	614,600
Victoria, ore	89	29,540
West. ore and ingots..	1,224	405,355
Northern exports, ore..	501	175,145
Queensland, ore	5,404	1,665,273
Italy, ore	272	3,814
Singkep, pig tin	499	262,995
Bolivia, ore	32,932	†10,756,800
Burma, ore	106	53,604

During the year 1908 the United States imported for consumption 41,267 short tons of pig tin, valued as entered at \$23,923,560, an average of 28.986 cents per pound. During 1908, as given by C. Mayer in the Annual Statistical Report of the New York Metal Exchange, the year's average price was 29.42. According to the American Metal Market and Daily Iron and Steel Report, it was 29.54 cents per pound. The agreement between these figures is as close as can be expected on an article which has a fluctuating price, and when it is also considered that the average price for the importation is exact as far as the invoice figures may be depended upon, while the market figures are an approximation.

The imports of tin into the United States since 1901 have been as follows:

Year.	Quantity.	Value.
1901	37,280	\$19,024,761
1902	42,522	21,263,337
1903	41,567	22,265,336
1904	41,472	22,356,895
1905	44,188	26,316,023
1906	59,477	37,447,315
1907	41,257	32,074,263
1908	41,267	23,923,560

The imports of 1907 and 1908 were remarkably close in quantity, only 10 tons more being imported in 1908 than in 1907; the difference in value, however, was very striking, being \$8,150,703, or about 25 per cent, less in 1908 than in

* Statement of F. J. B. Dykes, Senior Warden of Mines, Federated Malay States, quoted in "Mining Journal," London, vol. 85, 1909, p. 324. This tonnage paid a duty of \$5,334,010.

† Value from Bulletin International Union American Republics, July, 1909, p. 37.



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1907 for almost precisely the same quantity.

In 1907 prices reached 44 $\frac{3}{8}$ cents per pound in May, and fluctuated considerably, especially during the first half of the year, but later they dropped and became somewhat steadier toward the end of the year, which closed with tin at 27 $\frac{1}{4}$ cents per pound.

In 1908, as shown by the Annual Statistical Report of the New York Metal Exchange, tin opened at 26.625 cents per pound, averaging 27.35 cents during January. The highest price during the year, 32.275 cents, was toward the end of April, and the lowest, 26.25 cents, was in the beginning of January. Metal Statistics, p. 69, gives the lowest price as 25.45 and the highest as 32.75, with an average for the year of 29.54 cents per pound. As a whole, the tin markets for the year were steady, compared with those of recent years.

Recovered Tin.

The recovery of tin from scrap, dross, type metal, babbitt and other friction metals, bronze, etc., is growing, and especially is attention being given to saving tin from scrap, old cans, and similar waste.

The tin in tin plate, when exposed to the weather, slowly oxidizes, and the oxide, a brittle, hard, colorless substance, falls off as an imperceptible dust and is dissipated. When this happens the tin is lost for all time, so far as further use is concerned. The color of rusting tin plate is due wholly to oxides formed from the iron on which the tin is coated. The problem of recovering tin from old cans and other used tin plate is not simple. In structure tin plate is made up of a sheet of iron or steel, both sides of which are thinly coated with tin. The outer surfaces are practically pure tin, but between them and the iron is a film of an alloy of iron and tin, which forms the cement that holds the metals together. The whole of the tin amounts to only 1.5 to 3 per cent of the mass. In a process which depends on melting the tin from the tin plate only the outer film of tin, already partly oxidized, can be recovered. The alloy films will not yield to such a simple process. Chemical or electrolytic processes are necessary to separate the alloy. These are not extremely troublesome for clean material, such as new scrap. By far the greatest loss of tin, however, is not through scrap, but in tin plate that has been used, such as cans of various kinds—matter that is necessarily dirty. It can not be put into electrolyte direct without spoiling the electrolyte, and in chemical processes the chemicals are destroyed and lost in the dirt. Owing to these complicated conditions many processes have been devised and patented for treating tin plate wastes, but so far as known the

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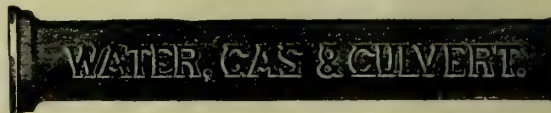
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only commercial operations on such waste in this country are confined to the treatment of clean tin scrap. Some tin is also recovered by remelting block-tin pipe and other articles made of tin.

During 1908, as reported by 33 companies, the quantity of tin recovered as such was 1,124 tons; of tin contained in alloys, including babbitt, type metal, bronze, etc., it was 1,666 tons, a total of 2,790 tons, valued at \$1,641,476. For 1907 16 companies reported a saving of 93 tons of tin as such and of 1,569 tons contained in alloys, the total being valued at \$914,404, but a fair comparison of the two years can not be made owing to incompleteness of the data for 1907.

A large but unknown recovery of tin from secondary sources was also made in Europe in 1908.

NOVA SCOTIA IRON ORE.

(Phillips Thompson in "Engineering and Mining Journal.")

A report just issued by the Mines Branch of the Dominion Department of Mines, and prepared by Dr. J. E. Woodman,* gives a comprehensive survey of the iron ore resources of Nova Scotia, with full descriptions of the localities where iron ore deposits are known to occur, a history of such development as has taken place, analyses of ores, statistics as to output, and much other information calculated to aid the development of the Canadian iron industry. The geographic relations of the deposits are fully set forth. While the ores are widely distributed only a few really important bodies are known, the largest of which are within easy reach of transportation and sufficiently near fuel and limestone to make smelting possible under favorable conditions.

Commencing at the west detached small deposits are found along the south side of the Bay of Fundy, from Brier island to Cape Blomidon, and on the south shore of Cobequid bay toward Truro. Behind or south of this line of deposits are the more persistent and important ores of the Clementsport and Nictaux-Torbrook fields. On the north side of the Bay of Fundy are many small isolated occurrences and a persistent and probably connected line of ore bodies from the western part of the Cobequid mountains east into Pictou county. Detached deposits occur eastward through Pictou and Guysborough counties, north of the region occupied by the granites and gold-bearing rocks. In Antigonish county is the large field of Arisaig, on

"Report on the Iron Ore Deposits of Nova Scotia," Part I. Canada; Department of Mines, Mines Branch. By J. E. Woodman; pp. 226, 9½x6½ inches; paper; illustrated. Ottawa, Canada, 1909; Government Printing Bureau.

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the coast south of which are numerous small occurrences. In Cape Breton island the iron ores are found in widely separated localities and some deposits promise to be of commercial importance. The coalfields of the province are numerous and so widely distributed as to supply fuel at a number of smelting centers, should it be required.

In view of the fact that so many of the iron ore deposits are small and scattered, with but few of considerable size, Dr. Woodman points out that if the question of additional centers for iron and steel manufacture arises, there are very few localities possessing the requisite qualifications, adequate supplies of suitable iron ore, flux and fuel, cheap transportation for these raw materials to the furnace, and shipping facilities. The cost of labor being even throughout the province it is not a factor in determining position. From this standpoint the following may be taken as a natural grouping (1) A western section in Digby and Annapolis counties with its industrial center at Annapolis; (2) a west-central section draining Kings, Colchester and Cumberland counties with Londonderry as its center; (3) an east-central section, embracing Pictou, Antigonish and Guysborough counties with a focus in or near the Pictou coalfield; (4) an eastern division including Cape Breton with its centers at Sydney and Sydney mines.

Dr. Woodman does not consider that there is any probability of Nova Scotia developing an iron industry from its own ores that will compete extensively with the American and Ontario products in their own markets. Its success must result from the comparative isolation of the Province, which diminishes the intensity of competition in the home market. So far as now known there are no deposits in Nova Scotia comparable in size, quality and low cost of treatment with those of Bell island, Newfoundland, or the Lake Superior ores. But there appears to be a possibility that the Province may be able with its own ores to supply eastern Canadian demand, as every ton of iron or steel that can be made to meet existing trade conditions can be sold. A characteristic of many of the ores is that they are highly silicious, phosphorus being also a common constituent. They are usually comparatively free from sulphur. So far no deposits of importance of uniformly bessemer grade have been discovered.

Dr. Woodman, in speaking of the policy to be pursued for the encouragement of exploitation, points out that the disposition to ask exorbitant prices by landowners, leaseholders or others concerned in booming iron ore properties has been a serious drawback to development. Large capitalizations are not justifiable under existing conditions. Small de-

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posits could advantageously be developed if the owners should work them and contract for the sale of the ore to the smelters, instead of holding them for sale at high prices. The bounty system, he urges, should be altered, the government paying the bounty direct to the miner upon raw iron ore at a sliding scale, according to quality, when that ore is accepted at the furnace and converted into pig iron.

HOW TO BURN LOCOMOTIVE COAL SUCCESSFULLY.*

By T. E. Adams, S. M. P., St. Louis & Southwestern Railway.

In a recent interview, under the head of "beginning right," an ex-railroad official, now holding a responsible position in other fields of work, discussing the trials and tribulations of the mechanical department of railroads, said concretely that the crying need to-day was specialization if success was to be assured. This specialization should apply not only to the officers of the transportation department in a general way, but to the officers of the mechanical department particularly, whose education in this branch of railroad operation is as necessary, if not more so, than that of the rank and file.

One of the greatest resources that mother earth has brought forth for the use of mankind is coal, and strange as it may seem there has never been a concrete idea as to what coal is and how to use it. We realize the necessity for this when we call to mind the meeting assembled by the president of the United States for discussion the preservation of natural resources; also the different papers read before the different railway clubs, and other measures taken for the furtherance of this important question.

Would it be of interest to the railroads of this country if they could use mine-run coal and pull heavy trains, both passenger and freight, over long divisions without shaking the grates of cleaning ash pans, maintaining 200 pounds of steam throughout the trip, and preventing to a great extent the smoke nuisance?

It has been my privilege in the past 25 years, during a scientific and practical investigation of the coal question, to use coal from the following States: Pennsylvania, Ohio, Indiana, Illinois, Kentucky, Tennessee, Arkansas, Oklahoma, Iowa, Montana and Washington; and notwithstanding the wide territory from which the coal was taken, the different grades used and the variance of opinions to the contrary, it has been demonstrated beyond a question of doubt that

* From a paper presented to the International Railway Fuel Association, Chicago, June 21, 1909.



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the impurities in coal do not necessarily fill up the firebox with an accumulation of ash, or produce clinkers, if the coal is properly fired, although it is true some coal takes more careful handling than others to bring about the required results. These principles will apply to any kind of the fuel coals now in use.

It may be of interest to the members of this association to have me in a few words outline our policy. The first important step that was taken in my own experience as a locomotive engineer was to eliminate under all conditions the excuse of "poor coal," the character of the coal not being considered. I consider this the first step in the line of progress, and this, with other important methods, has been followed up to the present time and it is unnecessary for me to say that the improvements made on the line with which I am associated are a great source of satisfaction not only to the management, but to the engineman in general.

The clinkering of coal is due to the manner in which the same is handled and not to the quality of the coal. It therefore must be understood by foremen in charge of engineers, hostlers, etc., that they must understand the principle upon which the desired results may be obtained.

At the several different places where switch engines are in use the business requires that they run continuously day and night, and if the engines come on the cinder pit with badly clinkered fires it causes delay to switch engines to have the same cleaned. In order to avoid this, it is necessary for engineers and firemen to understand that if the proper depth of fire is established on the grate when the fire is new it will not be clinkered from this cause. Enginemen should be instructed that fires must not be shaken, when the fire is light, to prevent clinkering.

Engineers, hostlers, firemen, etc., should all understand that when an engine has run an unusual length of time without the fire being cleaned and the idea of not shaking grates has been carried out and the firebox has become filled with ashes and more or less unburned coal, it does not necessarily demonstrate that the fire is in bad condition and should be cleaned, but on the other hand should be shaken down to a depth of eight or ten inches, the ash pan cleaned and the engine continued in service; and if the matter is handled in this way the condition of the fire on the grates will be much better than though it had all been cleaned out and a new fire established.

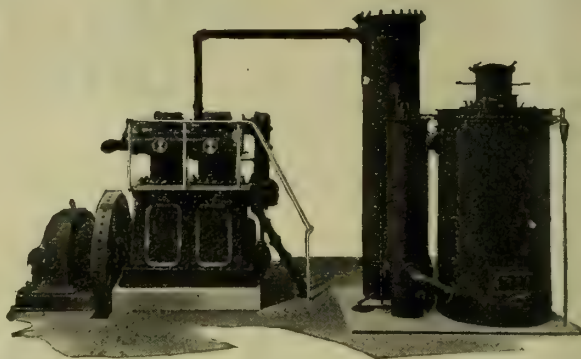
If the weather is at the freezing point or colder, and the train is an unusually heavy one in freight or passenger service, they should understand the necessity of building the fire on the grate

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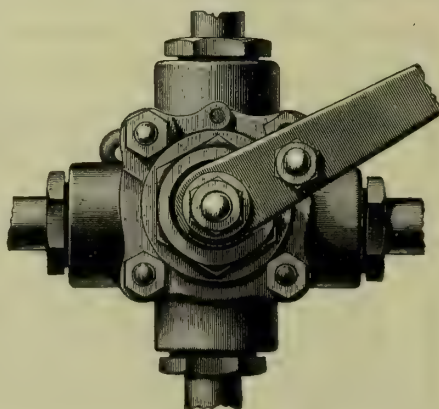
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surface so that the required steam pressure will be maintained.

In case, after leaving the terminal, when the fire has been prepared in the manner suggested, the engine does not steam freely, the grates should not be shaken, for the reason that there is more liability of the fire on the grates not being heavy enough to maintain the required steam pressure, or possibly not being spread over the entire grate surface, such as front corners and under flue sheets, etc. If the grates were shaken it would have the effect of rather increasing the difficulties instead of overcoming the same.

Enginemen should understand the importance of these instructions, as they are the fundamental principles of the art of firing, which has been demonstrated beyond a doubt; that where an engine lags for steam it is due to the condition of the fire in the box, and in almost every case the fire is either not distributed properly over the grate surface or it is entirely too light to suit the condition under which the engine is to be worked.

The principal thing to be understood in developing steam in a boiler freely is that the fire on grate surface must be maintained so that the air passing through it will be heated to a proper temperature to develop the steam pressure required, or otherwise the results will not be obtained.

In our talks with enginemen we wish these particular points brought out and thoroughly understood, and I would further suggest that this matter be discussed at all times when convenient opportunities present themselves with a view of instructing enginemen on these essential points of having engines maintain their regular steam pressure and thus avoid delays, reductions of trains and the possibility of an entire failure.

For the further information of the association I will say that these measures have been conducted along the line of a spirit of fairness, never having found it necessary to administer any discipline, and discussing the problem with the enginemen endeavoring to overcome mistakes.

For the purpose of using coal as nature intended it, in the interest of scientific principles and practical methods, and for the benefit of the owners, buyers and users of coal, I ask you to take at this time the first step in the great revolution which must surely come in the use of coal, and while there may be some question about it now, future results will develop that the action taken by the International Railway Fuel Association was justified.

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NEW PATENTS.

Other patents granted to August 3, as reported for the Industrial World by J. M. Nesbit, patent attorney, Park building, Pittsburgh, are as follows:

Duplex steam-engine, Elias W. Conkell, Canton, Ohio; process of casting metal ingots, John F. Monnott, New York, assignor to Monnott Metallurgical Company, same place; means for introducing feed-water into steam boilers, Charles W. Seddon, Proctor, Minn.; anti-friction-bearing, Henry Hess, Wawa, Pa.; kiln, Robert W. P. Horn, New Castle, Pa.; engine-starting jack, George A. Bull, Bucyrus, Ohio; roundhouse system, Carl W. Johnson, Chicago, Ill.; steam-generator, George A. Sims, Erie, Pa.; water-back for furnaces, Thomas Thornburg, Hammond, Ind.; device for overcoming dead-centers, Landis F. Dahl, Snohomish, Wash.; manufacture of lead arsenate, Arthur W. Lyda and William W. Cubbison, New Castle, Pa.; permanent concrete form, Michael D. Murray, West Homestead, Pa.; speed-changing device, Calvin N. Payne, Titusville, Pa.; process of sterilizing fluids, Charles B. Bartley, Pittsburgh; welded rail joint, Chester F. Gailor, New York; tin-transferring machine, Frank B. Bouinie, Monessen, Pa.; method of forming U-shaped turbine buckets, Huldreich Keller, Berlin, Germany, assignor to General Electric Company; rotary motor, James W. Mooney, Lawton, Okla.; smoke-consuming furnace, George J. Slaline, Cincinnati; beam-shaping press, Nathan H. Davis, Philadelphia; apparatus for the manufacture of tin or like plates, Savenious C. Stiner and Robert H. Kerhing, McKeesport; turbine-engine, Charles A. Sturtevant, Plainfield, N. J.; annealing oven, August Veghte, Albany, N. Y., assignor to Troy Malleable Iron Company, Troy, N. Y.; gas compressor, Thomas Shipley, York, Pa.; rotary internal-combustion motor, Frank Kasperek, Jeannette, Pa.; gas-regulator, Fred E. Youngs, Detroit, Mich., assignor to Equitable Meter Company, Pittsburgh; steam-trap, Harold D. Singer and Howard V. D. Pratt, Kankakee, Ill.; method of treating iron ore, John T. Jones, Iron Mountain, Mich., assignor to Jones Step-Process Company, Duluth, Minn.; seal for continuous heating furnaces, Horace E. Smythe, Oakmont, Pa., assignor to George Westinghouse, Pittsburgh; covering for blade-carrying elements, Francis Hodgkinson, Edgewood Park, Pa., assignor to the Westinghouse Machine Company, Pittsburgh; apparatus for controlling the flow of fluids, Samuel Cook, Wilmerding, Pa., assignor to George Westinghouse, Pittsburgh; machine for removing cores from castings, Fred M. Sharp and Leland W. Williams, Sharon, Pa.; turbine blade and vane, George Westinghouse, Pittsburgh; in-



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ternal combustion engine, Herbert H. Dow, Midland, Mich., assignor to Westinghouse Machine Company, Pittsburgh.

An improvement in metal bending and forging machines, No. 929,073, dated July 27, 1909, has been granted to John R. Blakeslee, of Cleveland, Ohio, and he has assigned the same to the Ajax Manufacturing Company, of Cleveland, Ohio.

This invention relates to metal bending and forging machines, and has particular regard to the provision, in connection with machines of this general class, of means whereby the reciprocation of the header or up-setting die slide may be more conveniently and certainly controlled than in present types of apparatus, and that, too, without shutting off and turning on the power.

The invention consists of a shaft, a slide, means for operatively connecting the said shaft and slide, said means including a pitman, a plunger reciprocably held in said slide and pivotally connected with said pitman, said plunger being adapted to engage said slide to retract the latter, a member in said slide movable in front of said plunger and adapted, when thus positioned, to render the latter effective to advance said slide, and a rock shaft on said slide connected to move said member, and means external to said slide adapted to engage said shaft to rock the same upon reciprocation of said slide.

Wilhelm Brugmann, of Dortmund, Germany, has obtained letters patent for an improved apparatus for pouring metal into a series of molds, No. 929,547, dated July 27, 1909.

The invention consists in the pouring of liquid iron into a series of intermittently traveling molds only, while these are temporarily at rest, and when these molds have resumed their travel, the stream of iron is led into a second series of molds which are caused to travel intermittently like the first series of molds, but in alteration with this, so that when the first series of molds are in motion, the molds of the second series will be at rest, and the mold of this second series which happens to be in a position under the stream of liquid iron, will be filled. Then when this mold has been filled, the stream of liquid iron will be led into the next mold of the first series which has been stopped and is now in position under the stream of iron ready for filling. When this mold is full, the next mold of the first series is then filled, and so on.

Johann Moll, of Augsburg, Germany, has obtained letters patent for an improvement in feed mechanism for metal working machines, No. 928,994, dated July 27, 1909.

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This invention relates to feed mechanism for metal working machines, and is especially adapted for use in planing lathes and other classes of machines of this character in which the work is fixed and the tool performs its cutting action by being moved with respect to the work.

The invention comprises a rotary tool carrying member, a tool support thereon, means for effecting adjustment of said tool support, movable mechanism serving when moved in one direction to operate said means, and adapted to be restored independently of said means, and segmental restoring and feeding members for said movable mechanism.

Letters patent of the United States has been granted to James E. Key, of Wilmerding, Pa., for an improvement in lathes, No. 929,226, dated July 27, 1909, and he has assigned the same to Westinghouse Air Brake Company, of Wilmerding, Pa.

The invention relates to an apparatus for turning down valve rods and other similar articles in which a plurality of operations are performed on the same rod for reducing various portions and lengths thereof to predetermined dimensions.

The invention consists of a bed, a carriage mounted thereon, and swinging

arm on one of the parts provided with an adjustable stop and a cam surface, and engaging means and a cam surface on the other part, all so arranged that the stop will engage the engaging means at the backward limit of movement of the carriage and on a forward movement the arm will be cammed open by the engagement of the cam surface of the arm with the cam surface of the other part.

INDIANA'S COKE PRODUCTION.

For the first time since 1903, Indiana appears as a coke producer in the reports compiled by E. W. Parker and issued by the United States Geological Survey. The output for 1908 was obtained from 10 ovens constructed during the year by the United Fourth-Vein Coal Company, at Black Creek. The coal used was unwashed slack, and the total amount of coke produced was 1,747 short tons. The 36 ovens of the Ayshire Coal Company, at Ayshire, have not been operated for several years. During 1908 the Citizens' Gas Company, of Indianapolis began the construction of 50 United-Otto ovens, and these will possibly be completed and placed in operation before the close of 1909. The probability is that West Virginia coal will be used in these ovens.

COAL POWER STILL CHEAPEST.

Why do we not have tide-mills in this country? Why is not the plan practicable of harnessing Hell Gate in New York, which has been recently broached, to utilize its currents in the production of electricity? Why has the Bay of Fundy never been turned into a monster power station? The answer seems to lie in the price of coal, says the Boston "Evening Transcript," and continues:

David A. Wells's remark, in "Recent Economic Changes," that a sheet of paper under the boiler of an ocean steamer would carry a ton of freight for a mile presents graphically the essential cheapness of power generated from burning coal under a boiler. It has been computed by the technicians that a tide-mill is not profitable with coal selling for less than \$10 a ton.

Frequent illustrations come to hand of the cheapness of coal power in this age of the world. Cities in which the water supply comes by gravity from a great distance often find it more expensive per gallon at the point of delivery than the water which is raised to an elevation by steam power from a lake below the town's own level. The claim is made in behalf of some of the best coal mines in America that electricity can be produced at them cheaper than



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1902	319,000	1.85%
1903	463,000	2.08%
1904	473,000	1.78%
1905	1,735,000	4.92%
1906	2,076,000	4.55%
1907	2,129,000	4.36%
1908	4,535,000	8.89%
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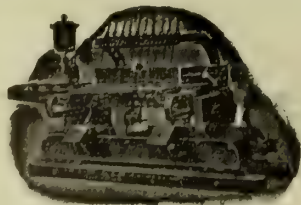
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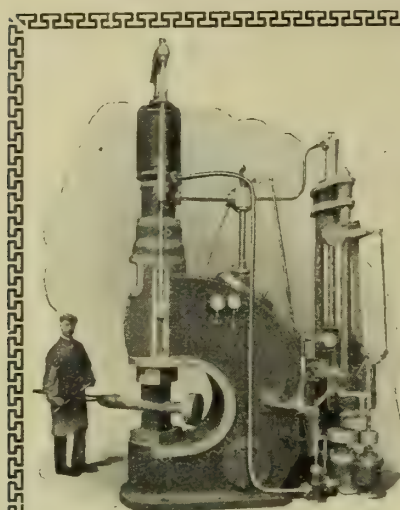
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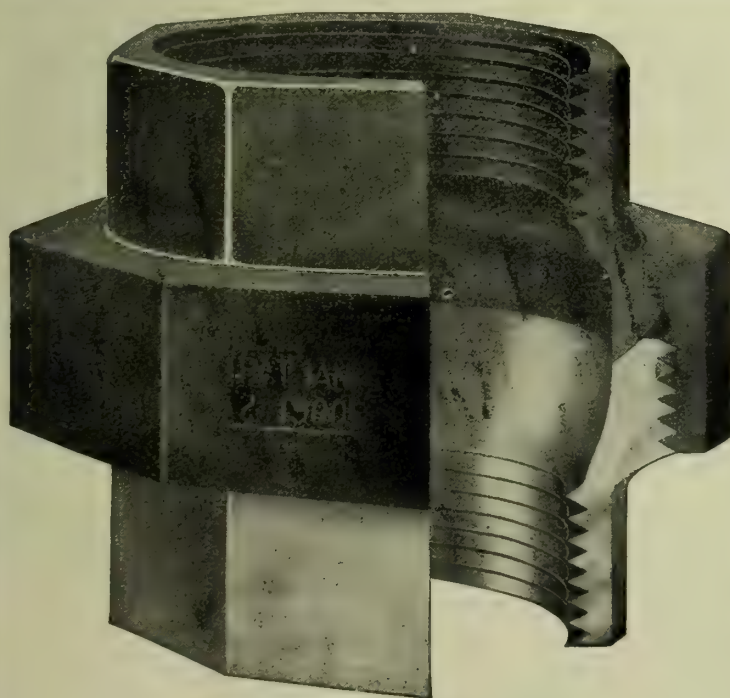
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Wickes Brothers Pittsburgh.

BOILER FITTINGS.
National Tube Co. Pittsburgh.

BLAST FURNACES.
Riter-Conley Mfg. Co. Pittsburgh.

BOILERS.
Wm. B. Scaife & Sons Co. Pittsburgh.
H. J. Koontz Pittsburgh.
Meehan Boiler & Con. Co. Lowellville, O.
Petroleum Iron Works Co. Sharon, Pa.
Struthers-Wells Co. Warren, Pa.
Wickes Brothers Pittsburgh.

BOILER TUBES.
National Tube Co. Pittsburgh, Pa.

BORING MACHINES.
Baird Machinery Co. Pittsburgh.

BRASS & BRONZE CASTINGS.
McKenna Bros. Brass Co. Pittsburgh.
Mesta Machine Co. Pittsburgh.
United Eng. & Fdry Co. Pittsburgh, Pa.

BRIDGE BUILDERS.
Riter-Conley Mfg. Co. Pittsburgh.

BRIDGE & STRUCTURAL WORK.
Jones & Laughlin Steel Co. Pittsburgh.
W. N. Kratzer & Co. Pittsburgh.
Meehan Boiler & Con. Co. Lowellville, O.
Riter-Conley Mfg. Co. Pittsburgh.
Wm. B. Scaife & Sons Co. Pittsburgh.

BELLS and GONGS (Seamless Steel.)
National Tube Co. Pittsburgh, Pa.

BUCKETS.
Browning Eng. Co. Cleveland, O.
Industrial Works Bay City, Mich.
Wickes Brothers Pittsburgh.

BARREL-HANDLING MACHINERY.
Link-Belt Company Philadelphia.

BELT CONVEYORS.
Link-Belt Company Philadelphia.

BUCKETS (Self-Filling).
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.

BUCKETS (Coal).
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.

BUCKETS (Ore).
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.

BRAKES (Electric).
Electric Con. & Mfg. Co. Cleveland, O.

CAR FORGINGS.
Connellsville Mfg. & Mine Supply Co.
..... Connellsville, Pa.
Phillips Mine & Mill Supply Co.
..... Pittsburgh.

CASTINGS.
Chambersburg Engineering Co.
..... Chambersburg, Pa.
Connellsville Mfg. & Mine Supply Co.
..... Connellsville, Pa.
Lewis Fdry & Machine Co. Pittsburgh.
Link-Belt Company Philadelphia.
McLanahan Stone Machine Co.
..... Hollidaysburg, Pa.
Mackintosh, Hemphill & Co. Pittsburgh.
Mesta Machine Co. Pittsburgh.
Scaife Fdy. & Machine Co. Pittsburgh.
Taylor-Wilson Mfg. Co. Pittsburgh.
United Eng. & Fdry Co. Pittsburgh, Pa.
Wheeling Mold & Foundry Co.
..... Wheeling, W. Va.

CEMENT.
Universal Portland Cement Co.
..... Pittsburgh.

CENTRAL CONDENSERS.
Mesta Machine Co. Pittsburgh.
Southwark Foundry & Machine Co.
..... Philadelphia.

CEMENT MACHINERY.
American Clay Working Mach. Co.
..... Bucyrus, O.

CHAIN BELTING.
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.
McLanahan-Stone Machine Co.
..... Hollidaysburg, Pa.
Scaife Fdy. & Machine Co. Pittsburgh.

CHEMISTS.
Gulick-Henderson & Co. Pittsburgh.

CRANE UNLOADERS.
Link-Belt Company Philadelphia.

CARS (Industrial).
Link-Belt Company Philadelphia.

CAR HAULS.
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.

CARRIERS.
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.

CHROME BRICK.
Gulick-Henderson & Co. Pittsburgh.
Stowe-Fuller Co. Cleveland, O.

COAL.
Jamison Coal & Coke Co. Pittsburgh.
Pittsburgh-Buffalo Co. Pittsburgh.
Washington Coal & Coke Co. Pittsburgh.

CHISEL BLANKS.
Cleveland Crane & Eng. Co., Wickliffe, O.

CIRCUIT BREAKERS.
Electric Controller & Mfg. Co.
..... Cleveland, O.

COAL AND ASH HANDLING MACHINERY.
Browning Eng. Co. Cleveland, O.
Industrial Works Bay City, Mich.
Jeffrey Manufacturing Co. Columbus, O.

CONTROLLERS (Electric).
Electric Con. & Mfg. Co. Cleveland, O.
Otis Elevator Co. Pittsburgh.

CONVEYORS AND ELEVATORS.
Scaife Fdry & Mach. Co. Pittsburgh.

CONVEYING MACHINERY.
Browning Eng. Co. Cleveland, O.
Jeffrey Manufacturing Co. Columbus, O.

CORRUGATED IRON.
McCullough Iron Co. Wilmington, Del.
Wm. B. Scaife & Sons Co. Pittsburgh.

CORRUGATED SHEETS.
American Sheet & Tin Plate Company
..... Pittsburgh.

CHROME ORE.
Stowe-Fuller Co. Cleveland, O.

CONTRACTORS.
Wm. Swindell & Bros. Pittsburgh.
The S. R. Smythe Co. Pittsburgh.
Wickes Brothers Pittsburgh.

CRANES-LOCOMOTIVE.
Brown Hoisting Mach. Co. Cleveland, O.
Browning Engineering Co.
..... Cleveland, O.
Cleveland Crane & Eng. Co.
..... Wickliffe, O.
H. J. Koontz Pittsburgh.
Industrial Works Bay City, Mich.
Northern Eng. Works Detroit, Mich.

CRANES & HOISTING MACHINERY
Baird Machinery Co. Pittsburgh.
Browning Engineering Co.
..... Cleveland, O.
Cleveland Crane & Eng. Co.
..... Wickliffe, O.
Industrial Works Bay City, Mich.
H. J. Koontz Pittsburgh.

Link-Belt Company Philadelphia.
Northern Engineering Works
..... Detroit, Mich.

CRUCIBLES.

Jos. Dixon Crucible Co.... Jersey City.

CRUCIBLE STEEL.

McKenna Bros. Brass Co.... Pittsburgh.
Wm. Jessop & Sons, Ltd.... New York.

CUPOLA BLOCKS.

Stowe-Fuller Co. Cleveland, O.

CYLINDERS.

Mesta Machine Co. Pittsburgh
Wm. B. Scaife & Sons Co.. Pittsburgh.

COUPLINGS.

National Tube Co. Pittsburgh

COUPLINGS (Flexible).

Electric Con. & Mfg. Co.. Cleveland, O.

CEMENT-HANDLING MACHINERY

Link-Belt Company Philadelphia.

CHAINS.

Jones & Laughlin Steel Co.. Pittsburgh.

Link-Belt Company Philadelphia.

**CHAINS (Dodge, Ewart, Ley, Monobar,
Etc.).**

Link-Belt Company Philadelphia.

CHAIN DRIVES.

Link-Belt Company Philadelphia.

CHAIN HOISTS.

Link-Belt Company Philadelphia.

CHAIN SLINGS.

Link-Belt Company Philadelphia.

CONVEYORS (Belt).

Link-Belt Company Philadelphia.

CONVEYORS (Flight).

Jeffrey Manufacturing Co.. Columbus, O.

Link-Belt Company Philadelphia.

CONVEYORS (Screw).

Jeffrey Manufacturing Co.. Columbus, O.

Link-Belt Company Philadelphia.

CHANNELS.

Jones & Laughlin Steel Co.. Pittsburgh.

W. N. Kratzer Co. Pittsburgh.

W. G. McKenney & Co. Pittsburgh.

Wm. B. Scaife & Sons Co.. Pittsburgh.

COAL HAULING TIPPLES, MINING,**WASHING & CRUSHING PLANTS.**

C. O. Bartlett & Snow Co., Cleveland, O.

Jeffrey Manufacturing Co.. Columbus, O.

**COCKS (Iron Body and "High-Duty-
Metal")**

National Tube Co.... Pittsburgh, Pa.

COKE.

Bessemer Coke Co. Pittsburgh.

Reed F. Blair & Co. Pittsburgh.

Jamison Coal & Coke Co. Pittsburgh

McKeefrey & Co. Leetonia, O.

Pittsburgh-Buffalo Co. Pittsburgh.

Rogers, Brown & Co. ... Cincinnati, O.

L. & R. Wister & Co. Philadelphia.

Washington Coal & Coke Co.. Pittsburgh.

COLUMNS.

Jones & Laughlin Steel Co.. Pittsburgh.

W. N. Kratzer Co. Pittsburgh.

Meehan Boiler & Con. Co. Lowellville, O.

Wm. B. Scaife & Sons Co.. Pittsburgh.

COLD DRAWN STEED SHAFTING**AND SHAPES.**

Cumberland Steel Co.. Cumberland, Md.

CONDENSORS.

Mesta Machine Co. Pittsburgh.

Southwark Foundry & Machine Co.

..... Philadelphia.

Wickes Brothers Pittsburgh.

CONSULTING ENGINEER.

Duff, Samuel E. Pittsburgh.

Kennedy, Julian Pittsburgh.

CONTRACT ROLL TURNING.

The Heinle Company Pittsburgh.

CONVEYORS & ELEVATORS.

C. O. Bartlett & Snow Co.. Cleveland, O.

Link-Belt Company Philadelphia.

Jeffrey Manufacturing Co.. Columbus, O.

COPING MACHINES.

Cleveland Crane & Eng. Co., Wickliffe, O.

CLAY MACHINERY.

American Clay Working Mach. Co.

..... Bucyrus, O.

Connellsville Mfg. & Mine Supply Co.

..... Connellsville, Pa.

Philips & McLaren Co. Pittsburgh.

Wickes Brothers Pittsburgh.

COUPLING NUTS.

Cleveland Crane & Eng. Co., Wickliffe, O.

CUPOLAS.

Northern Eng. Works ... Detroit, Mich.

Riter-Conley Mfg. Co. Pittsburgh.

CUPOLA BLOCKS.

United Fire Brick Co.. Uniontown, Pa.

DITCHERS.

Browning Eng. Co. Cleveland, O.

DIES.

Cleveland Crane & Eng. Co., Wickliffe, O.

DRIFT PINS.

Cleveland Crane & Eng. Co., Wickliffe, O.

DOVETAIL ROLLS.

The Heinle Company Pittsburgh.

DOUBLERS.

Cincinnati Punch & Shear Com-

pany Cincinnati, O.

DIRECT MOTOR DRIVES.

Crocker-Wheeler Co.... Ampere, N. J.

DREDGING MACHINERY.

C. O. Bartlett & Snow Co.. Cleveland, O.

Jeffrey Manufacturing Co.. Columbus, O.

DRIVE WELL POINTS AND WELL**SUPPLIES.**

National Tube Co.... Pittsburgh, Pa.

DREDGE CHAINS.

Jeffrey Manufacturing Co.. Columbus, O.

Link-Belt Company Philadelphia.

DREDGES.

Jeffrey Manufacturing Co.. Columbus, O.

Link-Belt Company Philadelphia.

DROP HAMMERS.

Chambersburg Engineering Com-

pany Chambersburg, Pa.

DRIVE CHAIN.

Link-Belt Company Philadelphia.

DYNAMOS & MOTORS.

Crocker-Wheeler Co.... Ampere, N. J.

H. J. Koontz Pittsburgh.

Wickes Brothers Pittsburgh.

ECCENTRIC ROLLS.

The Heinle Company Pittsburgh.

ELECTRIC HOISTS.

Cleveland Crane & Eng. Co. Wickliffe, O.

ELECTRIC FAULT FINDER.

Electric Con. & Mfg. Co.. Cleveland, O.

ELECTRIC LIGHTING MACHIN'RY.

Crocker-Wheeler Co.... Ampere, N. J.

Southwark Foundry & Machine Co.

..... Philadelphia.

Wickes Brothers Pittsburgh.

ELEVATORS.

Jeffrey Manufacturing Co.. Columbus, O.

Otis Elevator Co. Pittsburgh.

Scaife Fdry & Mach. Co.... Pittsburgh.

ENGINEERS.

Alex Laughlin & Co. Pittsburgh.

Chambersburg Engineering Co....

..... Chambersburg, Pa.

Duff, Samuel E. Pittsburgh.

Link-Belt Company Philadelphia.

Julian Kennedy Pittsburgh.

G. W. McClure Son & Co. ... Pittsburgh.

Morgan Construction Co.

..... Worcester, Mass.

Smythe, The S. R. Co.... Pittsburgh.

Wm. B. Scaife & Sons Co.. Pittsburgh.

United Eng. & Fdry Co.. Pittsburgh, Pa.

William Swindell & Bro. ... Pittsburgh.

ENGINEERS—INSPECTING.

Gulick-Henderson & Co.... Pittsburgh.

ENGINEERS—LABORATORY.

Gulick-Henderson & Co.... Pittsburgh.

ENGINEERS (Mechanical).

Link-Belt Company Philadelphia.

EQUALIZING GEARS.

Link-Belt Company Philadelphia.

ENGINES—STEAM.

Connellsville Mfg. & Mine Supply Co.

..... Connellsville, Pa.

H. J. Koontz Pittsburgh.

Mackintosh, Hemphill & Co.. Pittsburgh.

Mesta Machine Co. Pittsburgh.

Southwark Foundry & Machine Co.

..... Philadelphia

Wickes Brothers Pittsburgh.

EXHAUST PIPE HEADS.

Direct Separator Co. Syracuse, N. Y.

FLANGING CLAMPS.

Chambersburg Engineering Com-

pany Chambersburg, Pa.

Cleveland Crane & Eng. Co., Wickliffe, O.

FLANGE COUPLINGS.

Cumberland Steel Co.. Cumberland, Md.

FLIGHT CONVEYORS.

Link-Belt Company Philadelphia.

FORGINGS.

Cleveland Crane & Eng. Co., Wickliffe, O.

W. N. Kratzer & Co.... Pittsburgh.

Wm. B. Scaife & Sons Co.. Pittsburgh.

Heppenstall Forge & Knife Co....

..... Pittsburgh.

Mesta Machine Co. Pittsburgh.

FORGING PRESSES.

Chambersburg Engineering Com-

pany Chambersburg, Pa.

United Eng. & Fdry Co.. Pittsburgh, Pa.

FOUNDRY EQUIPMENTS.

Raird Machinery Co. Pittsburgh.

Cleveland Crane & Eng. Co. Wickliffe, O.

Meehan Boiler & Con. Co. Lowellville, O.

Northern Engineering Works

..... Detroit, Mich.

Wickes Brothers Pittsburgh.

FIREBRICK AND CLAY.

Bickford Fire Brick Co. Pittsburgh.

Clearfield Fire Brick Co.. Clearfield, Pa.

Dover Fire Brick Co. Cleveland, O.

Kier Fire Brick Co. Pittsburgh.

Pittsburgh-Buffalo Co. Pittsburgh.

Stuart Fire Brick Company.. Pittsburgh.

Sharon Fire Brick Co. Sharon, Pa.

Jos. Soisson Fire Brick Co.

..... Connellsville, Pa.

Sandy Ridge Fire Brick Co....

..... Sandy Ridge, Pa.

The Stowe-Fuller Co. Cleveland, O.

United Fire Brick Co. Pittsburgh.

W. H. Wynn & Co. ... West Decatur, Pa.

FITTINGS (Electric Crane).

Electric Con. & Mfg. Co.. Cleveland, O.

FITTINGS (Malleable and Cast Iron).

National Tube Co.... Pittsburgh, Pa.

FIRE ESCAPES.

W. N. Kratzer & Co.... Pittsburgh.

W. G. McKenney & Co. Pittsburgh.

FIREPROOFING.

W. N. Kratzer & Co.... Pittsburgh.

FEED WATER HEATERS, FILTERS

AND PURIFIERS.

H. J. Koontz Pittsburgh.

Petroleum Iron Works ... Sharon, Pa.

Wm. B. Scaife & Sons Co.. Pittsburgh.

Wickes Brothers Pittsburgh.

FURNACE BUILDERS.

Julian Kennedy Pittsburgh.

Alex Laughlin & Co.Pittsburgh.
Morgan Con. Co.Worcester, Mass.
G. W. McClure Son & Co. ...Pittsburgh.
Wm. B. Scaife & Sons Co...Pittsburgh.
The S. R. Smythe Co.Pittsburgh.
William Swindell & Bro ...Pittsburgh.
Tate, Jones & Co., Inc.Pittsburgh.

FLAG STAFFS.

National Tube Co.....Pittsburgh, Pa.

FLANGES (Cast and Malleable.)

National Tube Co.Pittsburgh.

FRICTION CLUTCHES.

Link-Belt CompanyPhiladelphia.
Wickes BrothersPittsburgh.

GALVANIZED SHEETS.

American Sheet & Tin Plate Com-
panyPittsburgh.
McCullough Iron Co...Wilmington, Del.

GAS BURNERS.

Tate, Jones & Co., Inc.....Pittsburgh.

GAS PRODUCERS.

Alex Laughlin & Co.Pittsburgh.
Morgan Con. Co.Worcester, Mass.
Riter-Conley Mfg. Co.Pittsburgh.
Struthers-Wells Co.Warren, Pa.
The S. R. Smythe Co.Pittsburgh.
William Swindell & Bro. ...Pittsburgh.

GAS ENGINES.

Mesta Machine Co.Pittsburgh.
Struthers-Wells Co.Warren, Pa.
Wickes BrothersPittsburgh.

GATE SHEARS.

Cincinnati Punch & Shear Co., Cincinnati
Cleveland Crane & Eng. Co., Wickliffe, O.

GEARS.

Taylor-Wilson Mfg. Co....Pittsburgh.
Mesta Machine Co.Pittsburgh.

GEARING (Bevel, Mitre, Spur, etc.)

Link-Belt CompanyPhiladelphia.

GIRDERS.

Jones & Laughlin Steel Co...Pittsburgh.
Meehan Boiler & Con. Co. Lowellville, O.
W. N. Kratzer Co.Pittsburgh.
Wm. B. Scaife & Sons Co...Pittsburgh.

GAS AND AIR VALVES.

Taylor-Wilson Mfg. Co....Pittsburgh.

GRAPHITE.

Jos. Dixon Crucible Co...Jersey City.

GRAY IRON CASTINGS.

Cleveland Crane & Eng. Co., Wickliffe, O.

GREASE.

Jos. Dixon Crucible Co...Jersey City.

GUILLOTINE SHEARS.

Cleveland Crane & Eng. Co., Wickliffe, O.

GENERATORS.

Crocker-Wheeler Co.....Ampere, N. J.
Wickes BrothersPittsburgh.

HEAD FRAMES.

Riter-Conley Mfg. Co.Pittsburgh.

HIGH SPEED PUNCHES.

Cleveland Crane & Eng. Co., Wickliffe, O.

HOISTING ENGINES.

Otis Elevator Co.Pittsburgh.
Wickes BrothersPittsburgh.

HORIZONTAL DRILLS.

Baird Machinery Co.Pittsburgh.

HORIZONTAL PUNCHES.

Cincinnati Punch & Shear Co., Cincinnati
Cleveland Crane & Eng. Co., Wickliffe, O.

HOT METAL CARS.

Meehan Boiler & Con. Co. Lowellville, O.

HOT BLAST STOVES.

G. W. McClure Son & Co...Pittsburgh.

HYDRAULIC MACHINERY.

Baird Machinery Co.Pittsburgh.
Chambersburg Engineering Co.....
.....Chambersburg, Pa.
Lewis Fdry. & Machine Co...Pittsburgh
Mesta Machine Co.Pittsburgh.
Scaife Fdry. & Machine Co...Pittsburgh.

HYDRAULIC VALVES AND FITTINGS.

Chambersburg Engineering Com-
panyChambersburg, Pa.
National Tube Co.Pittsburgh.

HYDRAULIC PUMPS.

Chambersburg Engineering Com-
panyChambersburg, Pa.
Wickes BrothersPittsburgh.

INDUSTRIAL RAILWAYS.

Link-Belt CompanyPhiladelphia.

INSPECTION.

The Heinle CompanyPittsburgh.
Gulick-Henderson & Co.....Pittsburgh.

IRON FENCING.

W. N. Kratzer & Co.....Pittsburgh.

IRON ROOFS & BUILDINGS.

W. N. Kratzer & Co.....Pittsburgh.
Wm. B. Scaife & Sons Co...Pittsburgh.
Riter-Conley Mfg. Co.....Pittsburgh.

IRON & STEEL BARS.

W. G. McKenney & Co.Pittsburgh.

"KEWANEE" UNIONS & SPECIALTIES.

National Tube Co.....Pittsburgh, Pa.

LABORATORY ORE GRINDERS.

McKenna Bros. Brass Co...Pittsburgh.

LADLES.

Meehan Boiler & Con. Co. Lowellville, O.
Petroleum Iron WorksSharon, Pa.

LATHES.

Baird Machinery Co.Pittsburgh.
Wickes BrothersPittsburgh.

LIFTING MAGNETS.

Browning Eng. Co.Cleveland, O.

LINK-BELTING.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt CompanyPhiladelphia.

LOCOMOTIVE CRANES.

Browning Eng. Co.Cleveland, O.
Industrial WorksBay City, Mich.
Wickes BrothersPittsburgh.

LINK-BELT (Original "Ewart").

Link-Belt CompanyPhiladelphia.

LUBRICANTS.

Jos. Dixon Crucible Co...Jersey City.

MACHINERY.

Rosedale Fdry & Mach. Co..Pittsburgh.

MACHINE TOOLS.

Baird Machinery Co.Pittsburgh.
Wickes BrothersPittsburgh.
H. J. KoontzPittsburgh.

MACHINE SHOP GALVANIZING.

Rosedale Fdry & Mach. Co...Pittsburgh.

MACHINE BOLTS.

Riter-Conley Mfg. Co.....Pittsburgh.

MACHINISTS.

Link-Belt CompanyPhiladelphia.

MAGNETS (Electric Lifting).

Electric Con. & Mfg. Co...Cleveland, O.

MAGNESIA BRICK.

Stowe-Fuller Co.Cleveland, O.

MALLEABLE CASTINGS.

Jeffrey Manufacturing Co..Columbus, O.

MECHANICAL STOKERS.

Rosedale Fdry & Mach. Co...Pittsburgh.

METAL STAMPING & FORMING.

Avery Stamping Co.Cleveland, O.

METALLURGISTS.

Gulick-Henderson & Co.....Pittsburgh.

METAL CONFORMATION.

The Heinle Co.Pittsburgh.

MILLING MACHINES.

Baird Machinery Co.Pittsburgh.

SHEET METAL MACHINERY.

Cincinnati Punch & Shear Com-
panyCincinnati, O.

METAL WORKING MACHINERY.

Cincinnati Punch & Shear Com-
panyCincinnati, O.

MINING MACHINERY & SUPPLIES

C. O. Bartlett & Snow Co..Cleveland, O.
Connellsville Mfg. & Mine Supply Co.
.....Connellsville, Pa.

Jeffrey Manufacturing Co..Columbus, O.

Meehan Boiler & Con. Co. Lowellville, O.

Phillips Mine & Mill Supply Co....
.....Pittsburgh.

Scaife Fdry. & Machine Co...Pittsburgh.

Wickes BrothersPittsburgh.

MOTORS.

Crocker-Wheeler Co.....Ampere, N. J.

Riter-Conley Mfg. Co.....Pittsburgh.

Wickes BrothersPittsburgh.

MULTIPLE PUNCHES.

Cincinnati Punch & Shear Co., Cincinnati
Cleveland Crane & Eng. Co., Wickliffe, O.

OIL BURNERS.

Tate, Jones & Co., Inc.Pittsburgh.

ORE CARS.

Jeffrey Manufacturing Co..Columbus, O.

ORE & ROCK CRUSHERS.

Jeffrey Manufacturing Co..Columbus, O.

McLanahan & Stone, Hollidaysburg, Pa.

Phillips & McLaren Co.....Pittsburgh.

Wickes BrothersPittsburgh.

ORE HANDLING MACHINERY.

Brown Hoisting Mach. Co., Cleveland, O.

C. O. Bartlett & Snow Co..Cleveland, O.

Jeffrey Manufacturing Co..Columbus, O.

Link-Belt CompanyPhiladelphia.

ORE CONCENTRATORS & SEPARATORS.

McLanahan & Stone, Hollidaysburg, Pa.

PATENTS.

J. M. NesbitPittsburgh.

Siggers & Siggers ..Washington, D. C.

PAINT.

Jos. Dixon Crucible Co...Jersey City.

"PECK" CARRIERS.

Link-Belt CompanyPhiladelphia.

PIPE COILS.

National Tube Co.Pittsburgh.

PIG METAL, ORES, &c.

Columbus Iron & Steel Co...Columbus.

McKeefrey & Co.Leetonia, O.

Rogers, Brown & Co.....Cincinnati, O.

L. & R. Wister & Co.Philadelphia.

PENSTOCKS.

Riter-Conley Mfg. Co.Pittsburgh.

PIPE MILL MACHINERY.

Taylor-Wilson Mfg. Co....Pittsburgh.

PIPE JOINT COMPOUND.

Jos. Dixon Crucible Co...Jersey City.

PILE DRIVERS.

Industrial Works.....Bay City, Mich.

PILLAR CRANES.

Industrial Works.....Bay City, Mich.

PIPES (RIVETED STEEL).

Riter-Conley Mfg. Co.Pittsburgh.

BICKFORD FIRE BRICK COMPANY, CRESCENT FIRE BRICK

For all high grade purposes,
made from the celebrated Clearfield County clays.
OFFICE

1122 FARMERS BANK BUILDING, PITTSBURGH, PA.

Telephones—Bell, Grant 3144. P. & A., Main 194.

WORKS AT CURWENSVILLE, CLEARFIELD COUNTY, PA.

DOVER FIRE BRICK COMPANY,

MANUFACTURERS OF

Highest Grade Pennsylvania and Ohio

FIRE BRICK

"NORTH BEND." "DOVER." "BUCKEYE."

GENERAL OFFICES:
509 CUYAHOGA BLDG.,
CLEVELAND, OHIO.

PITTSBURGH OFFICE:
610 FITZSIMONS BLDG.,
331 FOURTH AVE.

The Stowe-Fuller Co.

Manufacturers of

Magnesia, Chrome, Silica and High Grade Fire Clay Brick
for all metallurgical purposes
Importers of

Dead Burned Magnesite and Low Silica Chrome Ore of the highest quality.
CLEVELAND, O. PITTSBURGH, PA.

"WYNN" FIRE BRICK

For all Purposes, from the Famous Clearfield County Clays.

W. H. WYNN & COMPANY, Incorporated.

WEST DECATUR, PA.

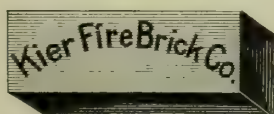
Sandy Ridge Fire Brick Co.

MANUFACTURERS OF FIRE BRICK

FOR ALL PURPOSES, FROM CLEARFIELD COUNTY CLAYS.
SANDY RIDGE, PA.

Established 1845

"SALINA"
"ETNA"
"LYON"
"YOUGH"



Manufacturers of
High Grade
FIRE CLAY AND
SILICA BRICK

PITTSBURGH, PA.

Joseph Soisson Fire Brick Company

UNITED FIRE BRICK CO.

HIGH GRADE FIRE CLAY AND SILICA BRICK,
SPECIAL SHAPES AND DUST.

Main office: UNIONTOWN, PA

Branch Office: 1601 ARROTT BLDG., PITTSBURGH, PA.

Phones: Bell 1957 Court; P. & A. 1596 Main

Clearfield Fire Brick Co.

CLEARFIELD FIRE BRICK

OFFICE AND WORKS, CLEARFIELD, PA.

Sharon Fire Brick Company,

MANUFACTURERS OF

First Quality Hearth and No. 2 Brick
for Blast Furnaces.

First Quality Clay and
SILICA FIRE BRICK.

Office and Works: SHARON PA,

PIPE & PIPE FITTINGS.

National Tube Co.....Pittsburgh, Pa.
U. S. Cast Iron & Pipe Fdry Co...
.....Scottsdale, Pa.
Wickes BrothersPittsburgh.

PLATE GLASS MACHINERY.

Rosedale Fdry & Mach. Co...Pittsburgh.

PLATE WORKS.

Meehan Boiler & Con. Co. Lowellville, O.
Petroleum Iron Works, Washington, Pa.
Riter-Conley Mfg. Co.....Pittsburgh.
Struthers-Wells Co.Warren, Pa.

PLATE PLANERS.

Cleveland Crane & Eng. Co., Wickliffe, O.

POLES (Tubing Steel.)

National Tube Co.....Pittsburgh, Pa.

POWER PLANTS.

Struthers-Wells Co.Warren, Pa.
Mesta Machine Co.Pittsburgh.
Wickes BrothersPittsburgh.

PNEUMATIC TOOLS.

Connellsville Mfg. & Mine Supply Co.
.....Connellsville, Pa.
H. J. KoontzPittsburgh.

PRESSES—DRILL & DROP.

Baird Machinery Co.Pittsburgh.

PULLEYS AND CLUTCHES.

Baird Machinery Co.Pittsburgh.
Jeffrey Manufacturing Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburgh.
Mesta Machine Co.Pittsburgh.
Wickes BrothersPittsburgh.

PUNCHES.

Cincinnati Punch & Shear Com-
panyCincinnati, O.
Cleveland Crane & Eng. Co., Wickliffe, O.
United Eng. & Fdry Co., Pittsburgh, Pa.

PUMPS.

Hall Steam Pump Co.Pittsburgh.
Mesta Machine Co.Pittsburgh.
Wickes BrothersPittsburgh.

PUNCH HOLDERS.

Cleveland Crane & Eng. Co., Wickliffe, O.

QUARRY MACHINERY.

Browning Eng. Co.Cleveland, O.
Wickes BrothersPittsburgh.
Connellsville Mfg. & Mine Supply Co.
.....Connellsville, Pa.
Link-Belt CompanyPhiladelphia.
Phillips Mine & Mill Supply Co.....
.....Pittsburgh.
Scaife Fdry. & Machine Co., Pittsburgh.

RIVET SETS.

Cleveland Crane & Eng. Co., Wickliffe, O.

RADIATORS.

National Tube Co.....Pittsburgh, Pa.

**RADIATORS (Staggered Tube-
Wrought.)**

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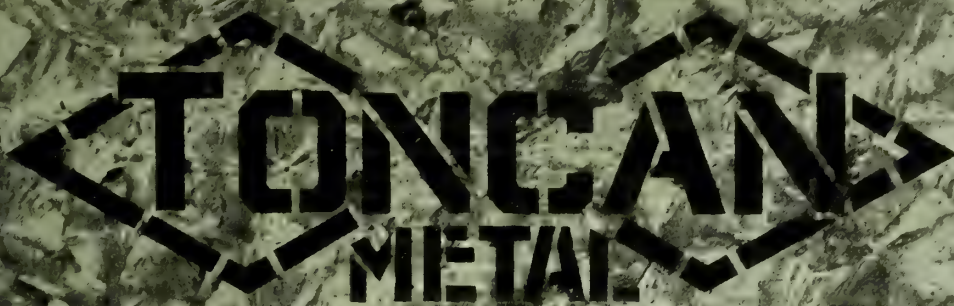
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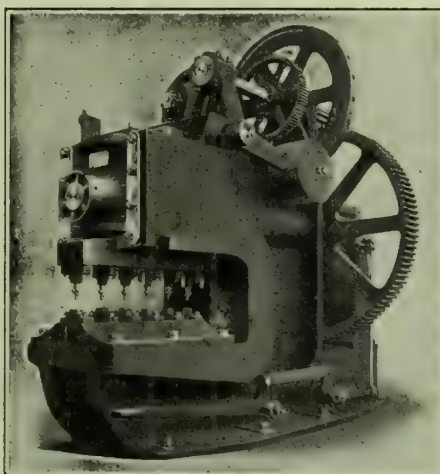
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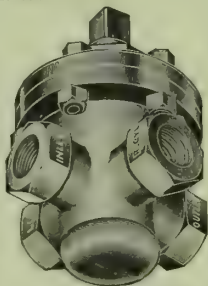
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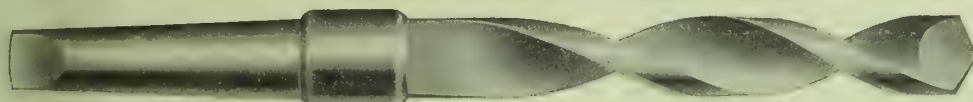
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PITTSBURGH, PA.

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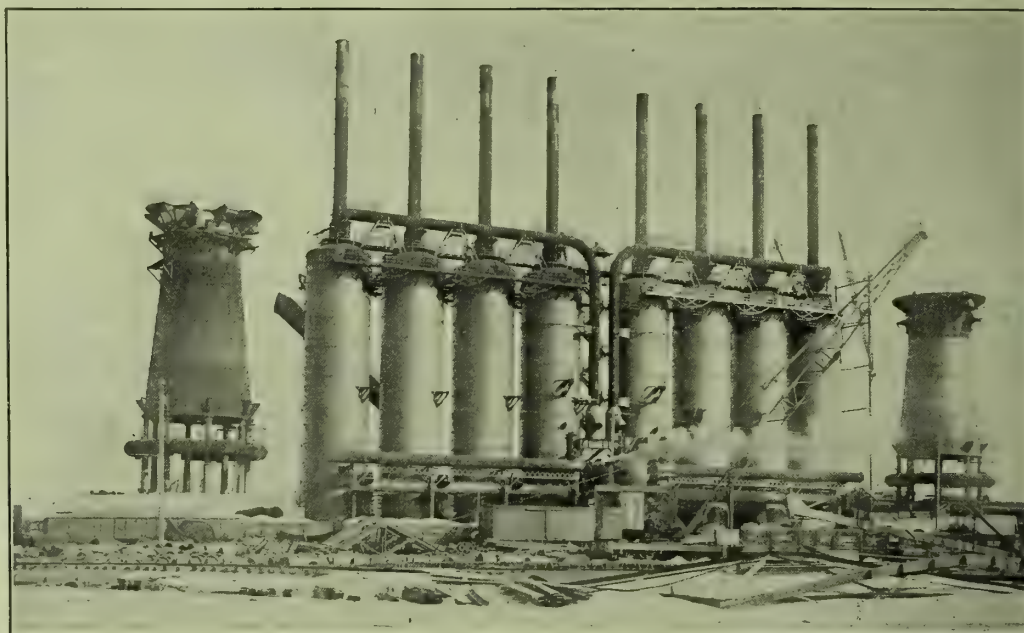
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INDUSTRIAL WORLD

FORTY-THIRD YEAR.

PITTSBURGH, PA., SEPT., 6, 1909

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Summary of General Iron and Steel Markets

RISE OF IRON TO NEW HIGH LEVELS THREATENS TO PRECIPITATE GENERAAL PRICE ADVANCES IN STEEL PRODUCTS BEFORE THEY WERE EXPECTED—COKE ADVANCES STEADILY—STEEL CORPORATION'S NEW PRODUCTION RECORD FOR AUGUST IN PIG IRON—COUNTRY'S TOTAL PIG IRON PRODUCTION FOR MONTH EXCEEDS 2,200,000 TONS—RAILROAD ORDERS PRESAGE ADDITIONAL DEMAND FOR IRON BEFORE CLOSE OF YEAR.

ADVANCING quotations in pig iron in all centers, with higher prices for furnace and foundry coke, have brought the iron and steel industry to the point where higher prices in some lines of finished steel products are regarded as certain by the middle of September, notwithstanding the determination of the steel companies to make no attempt to force the price levels upward.

Further indications that the trade believes the present trend of business will carry it to a still higher level of prosperity is to be found in the plans now being prepared for extensions, by eastern furnace interests and numerous independent steel makers, and by the announcement of ore purchases which will mean the importation of 250,000 tons from Newfoundland next year, and a tonnage of at least 180,000 from Sweden, probably increasing the foreign ore imports into the United States for 1910 to 2,000,000 tons, including Cuban, Spanish and Canadian ores.

The blast furnaces of the United States Steel Corporation made a record for August of slightly over 1,100,000 tons, including ferro-manganese and spiegeleisen. The July output, which was a record up to that time, was 1,008,000 tons. The production of pig iron for the country for August is expected to amount to 2,200,000 tons, an increase of about 100,000 tons as compared with the preceding month—which is at the rate of 26,500,000 tons a year. The banner year in pig iron production was 1907, when the total attained was 25,-

781,000 tons of all grades. Operations by the United States Steel Corporation are now about 94 per cent of its present capacity. In other words, the corporation produced a larger tonnage of iron and steel during the month of August than in any other month in its history, for 94 per cent of its present capacity means about 2 per cent more than the total capacity of its plants in 1907. During the panic, the Steel Corporation's production dropped below 40 per cent of its capacity, and before the declaration of the open market, in February, the combine was operating 58 per cent of its maximum.

Coke prices have bounded to \$2.00 and \$2.25, and furnace operators who have endeavored to get quotations on contracts for 1910 have met a flat demand for \$2.50 from the coke interests. The shortage of labor in the coke regions still continues, though the production has increased materially in the past 10 days. The higher prices of coke, and the fact that Eastern and Western melters alike were compelled to come to the Pittsburgh district during the past week with large inquiries for basic for this year's delivery, assisted in forcing all grades of pig iron at Valley furnaces up to new high figures. Bessemer, which had started the week with sales at \$16.50 Valleys went to \$16.75 and finally \$17.00 was obtained for small lots for immediate delivery. Ten days ago the Bessemer furnace interests had set \$17.00 Valleys, at the price for 1910 delivery, and considerable tonnage was sold at that figure, but it is probable a still better

price will be asked for Bessemer for next year, by the opening of the present week.

Basic was strong at \$15.50, Valleys and No. 2 foundry rose to \$15.75 and a shade higher for this year's delivery, a margin of 50 cents being added to these quotations for next year's delivery.

Eastern markets reflected Pittsburgh's strength. In fact, the greatest shortage seemed to be in the East, for the Eastern inquiries in Pittsburgh district for basic aggregated over 15,000 tons and one sale was reported on a basis of \$18.50 Philadelphia. Virginia furnaces got \$18.00 and better for basic in Philadelphia before the close of the week, while No. 2X foundry was quoted at \$17.50 to \$18.00, with little or none to be had in that market at the minimum. Southern furnaces, being all but sold up for the present year's deliveries, are quoting \$14.00 Birmingham, for delivery during the first quarter of 1910.

Rail orders and additional specifications for equipment from the railroads brought a better feeling in these trades, and caused the putting on of some additional capacity. The demand of the railroads for speedier deliveries on construction work will probably aid in bringing the promised advance in plates and shapes, which is expected before the middle of the present month. Bessemer billets also brought higher prices in Pittsburgh district, being quoted up to \$25.50, or \$1.50 above the July price. The National Tube Company advanced the price of all kinds of oil country goods \$2.00 a ton, but made no announcement of any increase in merchant pipe. Cast iron pipe was a shade higher, as a result of a considerable increase in demand.

The duplex furnace process is becoming more popular, as the scrap market shows signs of increasing scarcity. The experiments of the Pennsylvania Steel Company, at Steelton, during the last three months are said to have resulted in putting practically the entire capacity on the duplex process. The Jones & Laughlin Steel Company has been conducting similar experiments at its new plant at Aliquippa, which are said to have been very successful.

The settlement of the threatened labor troubles with the miners in the Pittsburgh district coal field removed a possible source of annoyance for the fall season. All the idle men returned to work the last of the week.

Pittsburgh District Developments Depicted During the Week

ALLEGHENY COUNTY'S OUTPUT.

Swank's report of the iron and steel production in Allegheny county, Pa., for 1907-8, published in the current issue of the American Iron & Steel Association Bulletin gives these figures on blast furnaces and completed rolling mills and steel works and the production of pig iron, steel ingots and castings, rails, structural shapes, plates and sheets, miscellaneous rolled products, and all finished rolled iron and steel. Rolled forging blooms and billets are included:

Gross tons.	1907.	1908.
Number furnaces.....	47	47
Production pig iron..	5,438,233	3,917,938
Number rolling mills and steel works....	66	64
Production Bessemer steel	2,972,286	1,361,895
Open-hearth steel ...	3,883,014	3,106,797
All other steel.....	50,290	20,764
Total steel	6,905,590	4,489,456
Production rails	770,333	269,735
Structural shapes	889,066	463,761
Plates and sheets	1,346,517	715,164
Other rolled products..	2,632,314	1,410,585
All rolled products...	5,638,230	2,859,246

In 1908 Allegheny county made over 56 per cent of the total production of pig iron in Pennsylvania and over 24.5 per cent of the country's total production, against 47.9 per cent and almost 21.1 per cent respectively in 1907.

In 1908 Allegheny county made over 64.6 per cent of the total production of Bessemer steel ingots and castings in Pennsylvania and over 22.2 per cent of the country's total production, against 68.2 per cent and 25.4 per cent respectively in 1907.

In 1908 Allegheny county made over 58.3 per cent of the total production of open-hearth steel ingots and castings in Pennsylvania and 39.6 per cent of the country's total production, against 49.3 per cent and 33.6 per cent respectively in 1907.

Of the steel ingot and casting production the county made 60.1 per cent, and of the total production of the whole country in that year it made 32 per cent, against 56.1 per cent and 29.5 per cent respectively in 1907.

In 1908 Allegheny county made over 54.7 per cent of the rail production of Pennsylvania and over 14 per cent of the country's production, against 68.1 per cent and 21.1 per cent respectively in 1907.

Of structural shapes in 1908 Allegheny county made over 57.2 per cent of the production of Pennsylvania and over 42.8 per cent of the country's production, as compared with 60.9 per cent and 45.8 per cent respectively in 1907.

In 1908 Allegheny county made over 46.7 per cent of the production of plates and sheets in Pennsylvania and over 26.9 per cent of the country's production, against 50.7 per cent and 31.6 per cent respectively in 1907.

In 1908 Allegheny county made over 50.9 per cent of the production of all kinds of finished rolled iron and steel in Pennsylvania and 24.1 per cent of the country's total production, as compared with 55.9 per cent and 28.3 per cent, respectively in 1907.

Country's Steel Census.

Swank's new report will show that in 1908 there were 487 works in 29 States and the District of Columbia which made steel ingots or castings or rolled iron or steel into finished forms, against 522 works in the same number of States and the District of Columbia in 1907, a loss of 35 in the number of active works. Of the total number in 1908 there were 357 works which rolled iron or steel into finished forms and 130 works which made steel ingots or castings but not finished forms of rolled iron or steel, as compared with 383 and 139 works respectively in 1907. Rolled forging blooms and billets are classed as finished products.

In 1908 the number of entirely idle iron and steel plants was 113, of which 78 were equipped with hot trains of rolls and 35 were equipped to make steel ingots or steel castings only.

LARGEST VANADIUM CRUSHER.

Among the shipments made by the Mesta Machine Company during the past week was a vanadium crusher for the American Vanadium Company, the largest ever built. Vanadium steel was used in the shafts and steel castings. Other shipments included a high pressure L. C. blowing engine to Richard Heckscher & Sons Company, Swadeland, Pa.; a 28, 48x48 cross compound Corliss engine to the Marion Steam Shovel Company, Marion, O.; and a 72-inch Type A Helander barometric condenser to the Watrous Engine Works Company, Limited, Brantfield, Ont.

The Washington, (Pa) Board of Trade has received a proposition for a site from the Bransom Machine Company, of Philadelphia. This concern is engaged in the manufacture of knitting machinery. The president of the Bransom company states that sufficient room for the enlargement of its factory is not available in Philadelphia under reasonable conditions.

GARY FURNACES COMPLETE.

All departments of the Riter-Conley Manufacturing Company's works, Pittsburgh, are being operated full time and several departments at capacity. The company has completed the steel work on eight 500-ton furnaces erected for the Gary, Ind., plant of the United States Steel Corporation, including the structural work on stacks, stoves, washers, cold and hot-blast piping, dust catchers and skip hoists. A similar contract has been about completed on three furnaces erected for the Jones & Laughlin Steel Company's Aliquippa plant.

The company recently booked orders for 6,000 tons of blast furnace work, much of which is for export. Considerable activity is reported in hydro-electric installations on which work was suspended during the recent depression, and a large amount of this work is being turned out by the company. One order in this line is for an installation at Boulder, Colo., in which the main feeder pipe is designed to carry a pressure of 800 pounds per square inch at the lower end. A part of this pipe is being made of plates two inches in thickness. Other orders of this kind call for 5,000 tons of piping ranging in size to 10 feet in diameter, to be used in the construction of hydro-electric plants in Mexico and South America.

A large tonnage has been booked for galvanized steel towers designed to carry high potential electric wires for power transmission. These installations will be made in Georgia, Central America and Brazil.

The welded steel plate department of the company's plant is working on contracts involving buoys for the United States government, tanks for electric transformers and piping of large diameter.

A large amount of work is being done on kilns for cement plants, a number of which are being delivered to the Universal Portland Cement Company for the addition made to the plant at Universal, Pa.

The company's structural shops are being operated at capacity and a number of important orders have recently been booked, including 2,500 tons of trestle work and storage pockets for the Charlotte Dock Company's coal docks at Rochester, N. Y.; 1,500 tons to be used in the construction of James W. Stewart & Company's 12-story building to be erected at Portland, Ore.; 1,000 tons for the Bridgeport Brass Company's tube mill at Bridgeport, Conn.; 1,500 tons for

bridges on the Chicago, Milwaukee & St. Paul Railroad; 3,000 tons for shops for the Chesapeake & Ohio and the Chicago, Burlington & Quincy Railroads; and about 8,000 tons recently placed for bridges and buildings.

CARNEGIE STEEL TO ABSORB PRESSED STEEL CAR?

A rumor gained currency in Pittsburgh during the latter part of the week just ended that, as a result of continued labor troubles at the Pressed Steel Car Company's principal plant at McKees Rocks, a deal was possible for the absorption of the Pressed Steel Car Company by the Carnegie Steel Company. From the fact that the Pressed Steel Car Company draws all its plates and unfinished steel from the Carnegie Company, such a proposition was considered by men in the trade to be a vastly economic move. The story was denied by representatives of the Pressed Steel Car Company.

The Wall Street Journal, of September 1, published editorially a particularly vicious attack on President F. N. Hoffstot, of the Pressed Steel Car Company, in the course of which it says:

President Hoffstot apparently is absolutely ignorant of those adjustments between the capitalist, the workman, and the public which have made possible the enormous efficiency of production of the past 10 years. His conception of the position of an employer of labor is half a century out of date, and half a century ago the public would have condemned methods which even then were considered oppressive and short-sighted. Mr. Hoffstot virtually claims that he is to enjoy all the privileges which an organized system of society gives him, together with the protection of public opinion, while he exercises in production methods which would degrade an East Side sweat shop.

This is no question of coercion by a labor union. The workmen are not unionized, and they are admittedly paid starvation wages, under a system which it is safe to say not one in a hundred of them understands, and one which is open to all manner of abuse. The labor, in fact, is contracted for, and the officers of the company think they have done their duty to their stockholders and the public when they shift the responsibility of exploited labor to the shoulders of irresponsible sub-contractors indifferent to anything except wringing the last poor cent out of a workman too ignorant to protect himself. To say that production in such circumstances is economically unsound is only to repeat the experience of the ages. The matter is something more than one of dollars and cents, and every decent man must feel that even if the Pressed Steel Car Company can thereby undersell its competitors it would not be entitled to do so by methods so inhuman and sordid.

President Hoffstot early last week published an interview, denying the charges of peonage at the McKees Rocks plant. He said in part:

As a matter of fact these peonage charges have been trumped up for the

purpose of confusing the public as to the real question. Hoping to create a favorable public opinion, the dissatisfied employes have endeavored to give the impression that the trouble at the works was over graft, the renting houses and the so-called 'piece pool' system.

The men now in the works seem to be entirely contented. Their number is increasing every day and they are turning out increasingly good work. So as to make sure that the food the men eat is good, different clerks take the same bill of fare as the men every day and thus keep check on its quality.

The Public Defense Association, of Allegheny county early in the week addressed a letter to President McCrea, of the Pennsylvania Railroad, protesting against men being held prisoners on the train of the railroad by employes of the car company. The car company, in a statement, declared 980 men were at work at the plant. Several hundred were imported during the week, but the output is still far from satisfactory.

FIRE AT LIMESTONE PLANT.

The Sharon Coal & Limestone Company, a subsidiary of the United States Steel Corporation, met with a serious loss by fire at its quarries near Leesburg, Mercer county. The machinery was wrecked, causing an indefinite suspension of operations. The loss amounts to \$25,000. The boiler house, engine house and building containing the stone crusher were destroyed.

The company was formed by Sharon men in connection with the Sharon Steel Company, but on the sale of the latter company's property to the Carnegie company the Leesburg plant went with the deal. Officials of the Carnegie Steel Company state that the suspension of operations will not interfere with the operation of the blast furnaces as there is a good supply of limestone on hand.

EXTEND AT SCRANTON.

Stockholders of the Scranton (Pa.) Electric Company, at a meeting August 31, voted an increase of capital stock from \$3,000,000 to \$7,000,000. The stock is to consist of 70,000 shares of the par value of \$100 each of which \$5,000,000 will be common stock and the balance preferred stock.

The plan is to issue all of the preferred stock except one-quarter million, \$250,000 to be issued at once, the remainder as the board of directors may direct. The stockholders also ratified all the acts of the board of directors since November 1, last. The purpose of the stock issue is to provide for purchases and expenditures the company made in the past year and to provide for the future extensions now planned.

NEW FORGE AND IRON SHOPS.

The Pittsburgh Forge & Iron Company, Pittsburgh, has placed a contract with the Penn Bridge Company, Beaver Falls, Pa., for the erection of new forge shop. The addition will be of steel construction 96x75 feet, and will be used by the company for the manufacture of shafts for steamboat wheels, locomotive axles and other heavy forgings.

Plans for the new building were made about two years ago, but operations were suspended during the recent depression. The contract for the foundations was let to E. Brogan, Northside, Pittsburgh, who will begin work immediately.

The new forge shop will be equipped with two heating furnaces and a heavy steam hammer, which has practically been erected. A 25-ton traveling crane will also be installed. W. G. Wilkins, engineer, Westinghouse building, is receiving bids for the last named installation.

New Pumping Equipments.

N. C. Davidson, Keenan building, Pittsburgh, reports the following sales of pumps and gas engines during the month:

H. L. Childs, Pittsburgh, 10-horse power Jacobson gas engines and a triplex pump; R. W. Mathews, Pittsburgh, 6-horse power Jacobson gas engine, deep well pump and electric light plant; Fly Cone Paper Company, Pittsburgh, 6-horse power Jacobson gas engine and power equipment.

Sand Plant in Operation.

The Altham Sand Company, Germania Bank building, Pittsburgh, completed the erection of its new plant at Thompson Station, Warren county, Pa., and began operation September 1. The company controls a large tract of land which is underlaid with a 20-foot vein of sand rock, containing over 99 per cent silica.

The sand is quarried and lowered on an 1,800-foot tramway with a fall of 700 feet. The plant is equipped with a 9-foot pan and 12-inch Muller wheels. The plant has a capacity of 40 tons per hour.

Gas Engine Inquiries.

The American Car & Foundry Company, Huntington, W. Va., has sent out an inquiry for a 375-horse power gas engine, vertical type preferred, with a speed of 175 to 225 revolutions per minute; also a 220 volt direct current generator to be direct connected to the engine.

The Thompson-Starrett Company, Commonwealth building, Pittsburgh, is taking estimates on two 175-horse power gas engines direct connected with 110

KW direct-current generators and a switchboard, to be installed in the new building being erected on Sixth avenue, Pittsburgh, by the Peoples Natural Gas Company.

To Abandon Old Shops.

The Roberts Boiler & Tank Company, Commonwealth building, Pittsburgh, is erecting a new plant at Queen Junction, Pa., and will move its shops from Mars to the new plant when the buildings are completed. The company has outgrown the capacity of the old plant.

New Elevator Installations.

The Otis Elevator Company, Pittsburgh, reports the following installations during the month:

A full automatic skip hoist for the Joseph Thropp Company, Earlston, Pa.; new automatic engine and remodeling skip hoist for the Lackawana Steel Company, Lebanon, Pa.; remodeling hoisting outfit for the Shenango Furnace Company, Sharpsville, Pa., to secure economy and efficiency. The company has taken a number of orders for standard hoists and the elevator department is well equipped with orders.

SMOKE NUISANCE IN PITTSBURGH.

Interest in the smoke problem is being revived in Pittsburgh. Mayor William A. Magee holds that the educational campaign heretofore conducted has lasted long enough, and that now the firms whose stacks produce smoke should be compelled to abate the nuisance if they will not do so willingly.

The former smoke inspector, William H. Rea, brought no prosecutions, but he consulted with manufacturers and owners of the stacks that emitted smoke, even teaching their firemen after a mechanical stoker was installed. As a result 400 mechanical stokers were installed during the time of Mr. Rea's service. The ordinance has been so long in force and Mr. Rea's efforts were so general that the mayor thinks every smoke producer ought to know the law now and ought to have a smoke consumer installed.

Recently Director E. R. Walters, at the request of the mayor, caused Smoke Inspector J. M. Searle to investigate the situation. Mr. Searle reported that 50 per cent of the firms making smoke seemed not to know that there was a smoke prevention ordinance, or at least, if they did know, they were making no effort to abate the nuisance. As a result Dr. Walters called in several of the chief offenders and talked with them. More will be called in until all have had a talk with him. Unless they stop making smoke they will be prosecuted.

THE WEEK'S CAR ORDERS.

Equipment orders during the week just passed, as given by the railroads, were largely for locomotives and passenger cars. In the Rock Island's order—the largest of the week—were 1,000 steel gondolas, which went to the Standard Steel Car Company; 1,000 40-ton box cars to the Pressed Steel Car Company, and 250 flat cars to the American Car & Foundry Company. The Ann Arbor Railroad ordered 500 steel freight cars from the Standard Steel Car Company. The Chicago-Great Western added 500 cars to its 1,500-car order from the American Car & Foundry Company. The Northern Pacific has ordered 200 freight cars from the Seattle Car Manufacturing Company. The cars are to be built at once at the Renton shops of the car company, near Seattle.

The St. Louis & San Francisco Railroad also ordered 1,000 steel coal cars from the Standard Steel Car Company, and 500 coal cars, 250 flat cars and 150 cabooses from the American Car & Foundry Company.

During the week the Southern Pacific ordered 75 passenger cars from the Pullman Company. The St. Louis & San Francisco ordered 78 passenger cars, of which the American Car & Foundry Company will build 40. The Frisco system's orders for passenger and freight cars during the week aggregated \$3,000,000.

The Rock Island's orders, though largely for wooden box cars, included also all kinds of rolling stock, freight cars, locomotives and passenger equipment. The orders contemplated a short time ago were to include only about 2,000 cars, and a few new locomotives, but the returns from the traffic experts have been so favorable as to induce the road's officials to increase the order to about 5,000 box cars, 170 passenger cars and 135 locomotives.

The passenger cars are to be all steel and, with the exception of the Pennsylvania's recent order for all-steel cars, is said to be the largest order for steel cars yet placed.

The Harriman Lines are reported to be figuring on purchasing about 900 box cars. The equipment orders placed by the Chicago & Northwestern since January 1 aggregate 125 locomotives, 125 passenger cars and 7,900 freight cars. The passenger car order previously reported as placed with the Pullman Company, amounting to 96 cars, has been increased under option and now consists of 40 coaches, 20 reclining chair cars, 15 smokers, 12 parlor cars, 5 dining cars, 16 postal cars and 17 baggage cars, all of which are to be of steel construction. Of the freight equipment 4,000 box cars were awarded to the Haskell & Barker Car Company, who also took orders for

600 refrigerator cars, 500 ore cars and 300 stock cars. The American Car & Foundry Company got the contract for 2,500 gondolas.

Northern Pacific's New Sleepers.

The Northern Pacific has announced its new equipment, work on which the builders have rushed, will be all delivered soon, several of the cars having been already received. There are 16 standard sleeping cars, and these will be placed in service immediately.

Eight of the cars will contain 14 sections and one drawing room, and eight cars will contain 10 sections, two state rooms and one drawing room. Every device for the comfort and convenience of passengers will be provided in these sleeping cars, including electric lights, fans, patent ventilators, dental lavatories and large and commodious toilet rooms.

The Northern Pacific recently received 13 new locomotives from the Baldwin Works, and 17 more are ordered. They are all of the Pacific passenger type, and those received have been assigned to service on the various divisions. They are capable of an average speed of 60 miles an hour with a train of eight cars.

NEW WAGE SETTLEMENT.

The bi-monthly examination of the sales sheets of the Republic Iron & Steel Company and Union Rolling Mill of Cleveland will take place September 10 at the office of the former corporation at Pittsburgh to determine the price to be paid puddlers and bar mill workers during September and October under the sliding scale.

The rate is now \$5.12½ a ton. A slight increase is looked for under the next examination because of the present brisk demand for bar iron. At the settlement two months ago the price of puddling decreased 12.2 cents a ton. Bi-monthly examinations of the sales sheets of the American Sheet and Tin Plate Company to determine the price to be paid sheet workers discontinued June 31, when the open shop order went into effect. The arrangement made with the independent manufacturers has not as yet been announced.

A FOUR-TON WHEEL.

The Scott Iron & Steel Company, of Pittsburgh cast a steel drive wheel at its foundry, Heidleberg, Pa., 13 feet 3 inches in diameter and weighing 8,700 pounds. When it was loaded on a flat car the Panhandle Railroad officers refused to send it through the Sheraden tunnel into Pittsburgh, but shipped it by way of Scully cut off. This is said to be the largest cast steel wheel of its kind in the world.

NEW CEMENT PLANT.

The Crescent Portland Cement Company's new plant at Crescentdale, Pa., was put in operation September 1, after the machinery in the several departments had been given a trial during the previous week. The members of the board of directors of the company were at the plant during the day to see the new mill in operation and were well pleased with the results attained.

The new plant has a daily capacity of 3,500 barrels a day and the old plant has a capacity of 400 barrels daily. Both departments will be operated at capacity as the company is well supplied with orders. The company also operates a lime mill at the plant, which is being operated steadily.

ABSORB OLD FOUNDRY.

The organization of the Lawrence Iron & Steel Foundry Company, with a capital of \$40,000, was announced during the week. The directors of the new concern secured a charter August 26. The directors include P. LeGouller, dealer in slate, roofing, and roofing specialties; William Yagle, of the Yagle Foundry & Machine Company, Limited; Oliver Wylie, who is extensively interested in the Alancia Company, at Avonmore, and others. The new concern will take over the plant of the Yagle Foundry & Machine Company, at Thirty-second street and the Allegheny Valley Railway. Extensions are being projected, but details cannot yet be announced.

STEEL FOUNDRIES EXPANDING.

Orders have been given increasing the operating capacity of the plants of the American Steel Foundries Company in the Pittsburgh district. It is semi-officially stated that the company for its fiscal year ended July 31 showed an improvement in net earnings of about 15 per cent compared with the preceding year. The company's plants will be running 75 per cent of their full capacity by the middle of the present month.

BIG SOUTHERN CONTRACT.

The American Bridge Company, McClintic-Marshall Construction Company and other Pittsburgh companies are after the contract for extensive bridge work in connection with the construction of a 90-mile link connecting the Carolina, Clinchfield & Northern Railroad with the Southern Railway, in North Carolina. The new line will run between Winston, Salem and Wadesboro, and is to be 90 miles long, the construction averaging \$75,000 to \$80,000 a mile.

making the total expenditure close to \$10,000,000. Contracts have been awarded for the construction, a portion of the awards going to the Ferguson Contracting Company, of Pittsburgh, and the E. G. Nave Brothers, Portsmouth, O.

SHARON HOOP EXTENSIONS.

Patterns are being made for the new 40-ton oven-hearth basic furnace announced sometime ago by the Sharon Steel Hoop Company. Two additional heating furnaces will also be erected. These improvements will cost approximately \$50,000. The contracts have been awarded, but construction will not be started until the structural iron addition is built to the building. The Sharon Steel Hoop Company has five open hearth furnaces, four of them being acid bottom and the fifth basic bottom.

CHARTERED IN DELAWARE.

Articles of incorporation were filed in Delaware for the American Iron, Sheet Bar & Skelp Company, of Pittsburgh, to manufacture iron, steel and other metals. Incorporators: George W. Helinger, Pittsburgh; Edward Schulz, Hayes Borough, Pa.; George P. Spinneweber, Fair Haven, Pa. Capitol stock, \$225,000.

FOR NEW TIRE PLANT.

The Firestone Tire & Rubber Company, of Akron, announced during the week that a new site had been purchased south of the city. Plans will be started at once for the construction of an entirely new factory. Both the new and old plant will be operated.

New Incorporating Company.

The Argus Incorporating Company, with offices in the Machesney building, Pittsburgh, recently incorporated, is prepared to secure certificates of incorporation in any State in the Union. The officers of the company are: President, Joseph Stuart; vice president and general manager, George D. Voce, secretary, Charles F. Beltz; treasurer, Charles B. Beldon.

WORLD BEATING ENGINE.

The Allis-Chalmers Company, Milwaukee, has just received a contract for the construction of what is said to be the largest city pumping engine in the world. The engine will supply water for the city of Wheeling, W. Va. The engine is triple expansion, crank and fly-wheel, standard, Allis-Chalmers type, and the low pressure cylinder will be 110 inches in diameter by 72 inches stroke. The engine will have a capacity of 20,000,000 gallons a day, and will have to pump against a regular domestic

water pressure of 150 pounds per square inch. There will be two 20-foot fly-wheels, weighing 100,000 pounds each and the total weight of the engine will be about 2,225,000 pounds.

TEXAS PLANT FOR SCHWAB?

News reports from Texas during the week just ended announced that Charles M. Schwab, during his recent visit there, had secured options on extensive iron ore deposits in the eastern part of the State, and later had closed for the purchase of 36,000 acres of ore near Hughes Springs, in Marion county, and other tracts in Cass and Upshure counties.

The news reports had it that Mr. Schwab had promised to erect a steel mill at Port Arthur, Tex., a Gulf port. Another company, with about 40 per cent Texas capital, is organizing to build a steel mill at Port Arthur, which has direct rail facilities to the fields. John W. Gates is interested in the mill project, and he says it will be independent.

MINES AND MINING OPERATIONS

The Franklin Coke Company, Tippecanoe, Washington county, Pa., has purchased 175 acres of surface and a limited number of acres of coking coal, and will erect 40 ovens.

* * *

Labor conditions in the anthracite regions are more than commonly peaceful. The Conciliation Board reports that there is a more than common paucity of complaints, and none of any nature that indicates wide dissatisfaction.

* * *

John Madill, of Ebensburg, Pa., has leased the mines and property of the All-run Coal Company at Heshbon, Indiana county, Pa. The seam of coal operated is known as the Lower Freeport, or Moshannon, and it is proposed to put out 500 tons a day.

* * *

Trade conditions in the anthracite regions continue dull, and no material increase of tonnage demand is expected until about September 15, when, it is expected fall buying for storage and winter needs will actively begin. Prices will move up to the schedule on September 1.

* * *

At a meeting of creditors held in Kittanning, Pa., last Saturday, acceptance of a bid of 75 cents on the dollar of liabilities for the assets of the Leechburgh Banking Company and J. C. Beale was accepted by J. D. Daugherty, referee in bankruptcy, but objection was filed and an appeal to the United States District Court was authorized by a committee. The assets include coal and mining properties valued at \$300,000.

* * *

The Hysylvania Coal Company, Columbus, O., has issued a circular from which the following is taken: "Subject to change or withdrawal at any time, we quote our Sunday Creek No. 23, per ton of 2,000 pounds f. o. b. mines, as follows: Sunday Creek No. 23 lump, \$1.50; Sunday Creek No. 23 3/4 lump, \$1.35; Sunday Creek No. 23 mine-run, \$1.20; Sunday Creek No. 23 nut, \$1.10."

Review of Industrial News From All Sections of the Country

EASTERN FURNACES BUYING FOREIGN ORES.

A sale was closed during the week just ended of 250,000 tons of Wabana (Newfoundland) iron ore for delivery during May and December, 1910. At the same time reports come from Reading of the probable closing of a contract for 175,000 tons of Swedish ore. The London "Iron & Coal Traders Review" says that the Kurunavaara Company has sold 180,000 tons of Swedish iron ore to the United States, delivery to be made in six months. Shipments are to be made from Narvik.

These contracts would indicate that, with Cuban and Spanish ores, American furnaces will next year absorb over 2,000,000 tons of imported iron ore. Under the present duty of 15 cents per ton (former duty 40 cents per ton) the imports of iron ore will undoubtedly be immediately greatly increased. During the past few weeks orders for about 400,000 tons of Spanish ore have been placed for delivery in 1909 and 1910. The Wabana (Newfoundland) ore will be largely imported at Philadelphia. This ore is worth, at the port of shipment, about \$1 per ton. While it is not generally known, it is, nevertheless, a fact that Newfoundland mines more iron annually than Cuba. The Spanish, Swedish, and Newfoundland ores will be used almost entirely by Eastern Pennsylvania, and perhaps some New Jersey blast furnaces. In addition, from 600,000 to 700,000 tons of Cuban ore may be expected to be landed on our shores in the 12 months of 1909, for the use of Maryland and Pennsylvania furnaces. In June alone the imports from Cuba amounted to over 66,000 tons. Under the reciprocity treaty with Cuba the duty on iron ore, under the new tariff, is 12 cents per ton.

The imports from Canada will perhaps amount to 100,000 tons. The total imports of iron ore in the calendar year 1909 will probably be in excess of 1,200,000 tons, and in 1910, when the new ore properties on the northern coast of Cuba will be heavy shippers, the total imports may exceed 2,000,000 tons.

In the fiscal year ended June 30, 1909, the total iron ore imported amounted to 1,015,647 tons, valued at \$2,714,691, as compared with 958,378 tons, valued at \$2,949,462 in 1908, and 1,096,717 tons, valued at \$3,360,449 in 1907.

Ore Shipments on Lakes.

The totals for August show that the movement of ore from the Lake Superior region is proceeding at a considerably

better rate than 6,000,000 tons a month. Shipments of the season to September 1 approximated 23,000,000 tons, and there is little reason to doubt the season's outgo will closely approach 40,000,000 tons.

It is estimated that during the past five weeks there have been sales of fully 600,000 tons of Lake ores in the Central West, all for this year's delivery, at \$3.50 for non-Bessemer Mesaba and \$3.70 for non-Bessemer old range ores.

The total tonnage of the Great Lakes for July, as reported a few days since by the Department of Commerce and Labor, from all Lake ports, aggregated 12,398,550 net tons, the largest monthly total recorded during the history of the Lake trade, exceeding the July, 1908, figures by over 2,500,000 net tons and those of July, 1907, by 1,225,000 net tons. The large gain in tonnage was due in the first place to the greatly increased shipments of iron ore, the ore shipments during July exceeding those of any month in the history of the trade. The total domestic ore shipments for the season ending with July were 15,280,497 gross tons, which is about 2,500,000 tons short of the 1907 record.

P. & L. E. Ore Tonnage.

The Bessemer & Lake Erie ore tonnage for the month of August showed 941,858 gross tons, or 29,463 tons less than the record month of July, which report showed 971,320 gross tons. The falling off was caused by a shortage in ore cars for a period of three days. The record so far for this year shows an increase of over 1,500,000 tons over the corresponding period of last year.

In spite of the car shortage the ore receipts at Conneaut harbor totaled 1,233,627 tons, which was 16,407 tons less than for the month of July. It is expected that the annual receipts will exceed 7,000,000 tons. Coal shipments at the harbor were light and but 48,833 tons left the port during the 31 days. There were 162 vessel entrances and 162 clearances, and 51 boats entered the harbor from foreign ports, and the exports totaled \$217,793, a good average.

J. & L. in Ore Fields.

The Jones & Laughlin Steel Company has taken an option on an immense tract of ore-bearing lands in the Iron River district in Minnesota, and the property is now being tested with diamond drills. The company in the meantime has suspended its exploration work in the Cuyana Range, in the same neighborhood, but will take it up again in the spring.

PLAN LARGER PIG IRON CAPACITY.

Plans for extensive increases in blast furnace capacity will, it is said, be shortly announced in the East. At Buffalo, the Buffalo Union Furnace Company, a subsidiary of the Hanna interests will equip one of its furnaces with pig casting machinery for making basic iron. The company will build two furnaces on the Niagara River site lately acquired from the parent concern, M. A. Hanna & Company, Cleveland, and one of the new furnaces will be equipped to make basic in addition to Bessemer iron.

There are reports to the effect that the Bethlehem Steel Company has prepared plans for two new blast furnaces. The Eastern Steel Company, Pottsville, Pa., will shortly begin the construction of two additional open-hearth furnaces and the installation of improved facilities in its yards for cutting and shipping structural material. Plans are now being prepared and the work will be rushed as rapidly as possible. At present, there are four open-hearth furnaces at this plant.

Rodgers, Brown & Company's Union stack at Ironton, O., which has been practically rebuilt, will be blown in October 1 on basic iron.

The American Rolling Mill Company at Middletown, O., has let several contracts for its new 60-ton basic open-hearth furnace, which will give it three. It is improving its bar mill at Middletown, and adding two annealing furnaces at Zanesville.

The Allis-Chalmers Company will enlarge its foundry capacity, either at Cincinnati or at Milwaukee. Plans, however, are still incomplete. Officers of the firm deny recent reports in the daily press of extensive enlargements pending at the Milwaukee plant. They say the plans for the extensions to the Cincinnati foundry, however, were almost ready for the taking of bids.

STEEL PLANT AT CAVITE.

It is announced that the Brylgon Steel Casting Company, which is located near New Castle, Del., has been awarded a contract to build a steel plant for the United States at Cavite, Philippine Islands. Workmen will be sent from the company's local plant to Cavite to superintend the construction of the new plant and then to instruct the local workmen.

Subscribe for the Industrial World.

"SPEEDING UP" AT GARY.

Preparations are being made at the Steel Corporation's new works at Gary, Ind., to start six or seven open-hearth furnaces in the No. 3 plant, which will considerably increase the capacity of Gary on billets. Judge Gary is quoted in London as saying the Steel Corporation is now expending \$1,000,000 a month in new construction at Gary, and that eventually 25,000 men will be employed there. The Riter-Conley Company during last month completed the structural work on the last of the eight blast furnaces for the plant.

The Niles, O., furnace of the Carnegie Steel Company was fired up during the week just ended, after being idle a long time. The Carnegie Company now has seven blast furnaces supplying metal to the Ohio works, at Sharon, the largest number ever in operation at one time.

In addition to the 4,200 acres of coal land which the Illinois Steel Company has secured by direct purchase of coal rights, or by options in the immediate vicinity of Georgetown, Ill., it is now taking over 2,700 acres of coal rights which have been held on options by the Hammond Coal Company.

SELL PANAMA JUNK.

A lot of old French junk that has been accumulating along the line of the Panama canal is about to be sold by the Isthmian Canal Commission. The amount has been variously estimated from 45,000 to 120,000 tons and includes old locomotives, dump cars, tanks, barges, boilers, dredges and other miscellaneous junk left on the isthmus by the French or accumulated there since the beginning of operations by the Americans.

The bids are to be opened September 16. As this material is principally of foreign manufacture it is subject to a duty on entry into the United States of \$1.00 a short ton. By the act of May 27, 1908, this duty will be returned to the funds for canal construction, if the material is sold by the commission in the United States. Consequently it will not be disposed of until after passing through the New York customs house.

The sale is made at this time for the dual purpose of procuring ballast for the cement ships Ancon and Cristobal on their return voyages to New York, and of getting the material, which lies in the basin of Gatun lake, out of the way before the lake is filled.

As to Scrap Imports.

The new duty of \$1.00 per ton on scrap iron and scrap steel will probably increase American imports on these materials, declares the American Iron & Steel Bulletin, though, the Bulletin ex-

plains in its current issue, it is curious that in late years we have annually exported more scrap iron and scrap steel than we have imported. In the fiscal year 1907 we imported for consumption 21,848 tons, valued at \$13.66 per ton, and in the fiscal year 1908 we imported for consumption 17,309 tons, valued at \$12.41 per ton, whereas in 1907 we exported 22,151 tons, valued at \$15.61 per ton, and in 1908 we exported 20,518 tons, valued at \$15.75 per ton. Our imports of scrap come principally from Canada, Cuba and Panama in the order named, while our exports go almost entirely to Canada and Italy. In 1908 Canada alone took 14,965 tons, and in 1907 it took 17,471 tons, while in 1908 Italy took 4,814 tons and in 1907 it took 4,036 tons. The imports and exports of scrap in the fiscal year 1909 have just been issued by the Department of Commerce and Labor. The imports were much smaller than in 1908 or 1907, and amounted to only 5,182 tons, of an average value per ton of \$11.77, while the exports were much larger than in 1908 or 1907, amounting to 29,030 tons, of an average value per ton of \$14.04.

ASKS \$429,000 FROM STATE.

The Ferguson Contracting Company, of New York and Pittsburgh, on August 26, filed at Albany, N. Y., a claim against the State of New York for alleged damages of \$429,877 arising from the cancellation of a barge canal contract held by the company. The contract called for the erection of two locks and five-eighths of a mile of excavation at the proposed eastern terminus of the canal at Waterford, at a cost of \$852,000. Before the contract was completed the State ordered certain changes, at an additional expense, but the company held that the changes were so radical as to amount of an abrogation of the original contract and refused to do the work. The State thereupon ordered the contract taken from the company, which now sues to recover damages for materials and prospective profits.

Bridge Contracts Awarded.

The Queen & Crescent Railway has awarded contracts for a new bridge spanning the Ohio at High Bridge, Ky. The American Bridge Company was awarded the contract for the superstructure. The bridge will be 305 feet above low-water mark; steel construction on solid cement piers; will contain double tracks and will cost about \$1,000,000.

The Penn Bridge Company, Beaver Falls, was awarded the contract for an \$18,000 bridge across Bayou St. John, at New Orleans. The Canton Bridge Company, of Canton, O., took the contract

for four bridges at Tusla, Okla., at \$54,990. Other bidders were the Illinois Steel Company, \$58,330; Wichita Construction Company, \$61,700, and Central States Bridge Company, of Indianapolis, Ind., \$64,600.

The Boston Bridge Works took the contract for a bridge over the Androscoggin river at Rumford, Me., at \$56,759. Other bidders were Pennsylvania Steel Company, \$61,865; Penn Bridge Company, Beaver Falls, Pa., 66,865; American Bridge Company, \$58,975.

Alliance, O., citizens have voted a \$75,000 bond issue for the construction of viaduct and subways at the Pennsylvania Railroad tracks.

FOREIGN PIPE ORDERS.

The great difference in the cost of producing iron and steel in this country and in Germany is strikingly shown by an order for wrought steel pipe for the Cobalt mining district in Canada which was recently secured by a German company. There was keen competition between the American and German pipe makers, the latter finally succeeding in getting the order at a price said to be from 10 cents to 25 cents per foot below the cost of production in this country. The Dingley duty on wrought iron or steel pipe or tubes was 2 cents per pound, if not thinner than No. 16 wire gauge. The Taft duty is 1 cent per pound. In the fiscal year ended on June 30, 1908, the imports for consumption of wrought iron and steel pipe or tubes amounted in value to \$108,438.

The American Iron & Steel Bulletin rises to inquire how, if this country could not compete with Germany with a duty of 2 cents per pound can we expect to compete with her with this duty reduced to one cent.

Cast Iron Pipe to Advance.

Additional capacity was put on during the week just ended by the United States Cast Iron Pipe & Foundry Company and other makers. Prices have been strengthened, and higher prices may be looked for.

Among cast iron pipe lettings pending is one for six miles of large size for Christiansburg, Va., and one for 1,400 tons of varying sizes for Marietta, Ga. The Marietta, Ga., contract, which will be closed the coming week, includes much water works equipment, with pumping machinery of a total capacity of 3,500,000 gallons, and filter plant. McCrary & Company, engineers, Atlanta, Ga., are in charge of the work.

Armourdale, Kan.—Fire destroyed the plant of the Western Wheelbarrow Works August 23. Loss estimated at \$100,000.

ENGINEERS' MEETINGS.

The Western Society of Engineers has sent out a circular giving the list of subjects which will make up the season's work for the society. The first meeting of the season was held September 1, at the Society rooms in the Monadnock block. Willis McKee, of Elyria, O., presented a paper on "The Rolling of Special Sections of Iron and Steel." This paper has been printed and sent out in advance form. Other papers for presentation during the fall and winter are:

Some Engineering Features of the Chicago Harbor, John M. Ewen, Chicago; Wood Preservation, from an Engineering Point of View, a representative of the United States Forest Service; Hydraulic Mining of Auriferous Gravels, J. W. Phillips, Lewiston, Cal.; The Loss of Heat Through Furnace Walls, W. T. Ray and Henry Kreisinger, Pittsburgh; The Panama Railroad and its Relation to the Panama Canal, Ralph Budd, Cristobal, C. Z.; Progress of the Coal Mine Investigations by the United States Geological Survey, George S. Rice, Pittsburgh; River and Harbor Improvements at Chicago, Thomas H. Rees, Chicago; Compressed Air in Contract Work, M. W. Priseler, Chicago; The Corrosion of Steel in Concrete, R. P. Melendy, Boston; Reinforced Concrete Trestles, C. H. Cartledge, Chicago; The Kilbourne Plant of the Southern Wisconsin Power Company, D. W. Mead, Madison; Economies in Central Station Management, D. L. Abbott, Chicago; Depreciation and Reserve Fund for Electric Properties, William B. Jackson, Chicago; New Illuminants, Carl Wiler, Chicago. The regular meetings will occur on the following dates: Wednesday, October 6; Wednesday, November 3; Wednesday, December 1; Tuesday, January 4, 1910, annual meeting; Wednesday, February 2, 1910. Extra meetings will be on Wednesday evenings, probably as follows: September 15; October 20; November 17; December 15; January 19, 1910; February 16, 1910. J. H. Warder is secretary of the Society, 1735 Monadnock building, Chicago.

Western Pennsylvania Engineers.

"Contracts, with special relation to Structural Steel Work" will be the subject considered by the Structural Section of the Engineers' Society of Pennsylvania, at its monthly meeting September 7, in Pittsburgh. J. A. McEwen, engineer with the Pittsburgh Bridge Iron Works, will open the discussion. Speakers will be: Watson B. Adair, attorney, "Penalties and Business Damages for Failure to Complete"; H. M. Stilley, attorney, "Liability for Damages During Construction"; S. A. Schreiner, attorney, "Arbitration of Disputes;" O.

M. Topp, architect, "Relations of the Architect to Other Parties in a Contract"; Edward Godfrey, engineer with Robert W. Hunt & Company, "Relations of the Inspector to Other Parties in a Contract."

Car Lighting Supply Men.

The Association of Car Lighting Supply Manufacturers was organized at a recent meeting in Chicago to furnish entertainment and to give exhibitions of car lighting supplies in connection with the meetings of the Association of Car Lighting Engineers, whose next meeting will be held at Chicago, on October 4, 5, 6 and 7. The following officers of the Association of Car Lighting Supply Manufacturers have been elected: President W. L. Bliss, United States Light & Heating Company; eastern vice president, C. W. Bender, National Electric Lamp Association; western vice president, W. E. Ballentine, Willard Storage Battery Company; secretary, J. Scribner, General Electric Company; treasurer, Edward Wray, Railway Electric Engineer. A committee on arrangements has been appointed, of which J. M. Schilling, of the Westinghouse Electric & Manufacturing Company is chairman.

Railway Bridge Association.

The nineteenth annual convention of the American Railway and Bridge Building Association will be held at Jacksonville, Fla., October 9 to 21. This association is successor to the Association of Railway Superintendents of Bridges and Buildings. The president, J. P. Canty, Boston & Maine Railroad, Fitchburg, Mass., announces that a general invitation is extended to all railway officials and others interested. Members of the American Railway Bridge & Building Supply Men's Association will attend in large numbers.

GET MICHIGAN POWER.

It is announced at Lansing, Mich., that articles of incorporation have been filed by 18 power companies, with a total paid-in capitalization of \$3,200,000. It is believed these charters mean that practically all of the available power sites in Northeastern Michigan have been acquired by Eastern interests, which now control gas and electric properties in many cities of the State.

While there is nothing in any of the incorporation papers to connect either firm with the companies, it has been reported that Hodenpyl, Walbridge & Company, of Philadelphia, were interested in Michigan power sites.

Fourteen of the new concerns are water power companies. Their incorporators are E. F. Loud and H. K.

Loud, of Au Sable, Mich., each of whom holds one share of stock, and L. A. Wood, of New York, to whom the other 998 shares are credited.

In the second group of three companies George E. Hardy, of Englewood, N. J., is the heaviest stockholder, with W. M. Baton and J. C. Weadock, of New York, small holders. These companies and their capitalization are as follows: The Saginaw Power Company, \$500,000, and the Pontiac Power Company, \$200,000. The Charlotte Power Company, with a capitalization of \$50,000, is incorporated by George H. Clark, E. Clark and George A. Crawford, of Detroit.

FOR BATTLESHIP ARMOR.

Contracts for the main armor of the new battleships Arkansas and Wyoming, amounting to about 12,000 tons, were awarded at Washington by Acting Secretary of the Navy Winthrop to the Bethlehem, Carnegie and Midvale steel companies. Each will furnish almost equal amounts, their prices having been the same. For the smaller part of the armor, amounting to about 1,500 tons, in which the bids of the companies differed as to certain classes, an effort may be made to distribute the awards.

Build Collier for \$889,600.

The Maryland Steel Company, of Sparrows Point, submitted the lowest bid at the Navy Department September 1 for constructing the naval collier authorized by the last Congress, at a cost not to exceed \$900,000. The company submitted two bids, the lowest being \$889,600, the higher bid being \$940,200. Close figuring marked most of the bids submitted, the others being as follows: Moran Brothers, Seattle Wash., \$898,000; the New York Shipbuilding Company, \$1,050,000; Fore River Shipbuilding Company, of Quincy Mass., \$974,000; the Newport News Shipbuilding and Dry Dock Company, \$900,000, and William Cramp & Sons, \$899,900.

Bids on 10,000 Projectiles.

On the government's specifications for 10,000 projectiles, bids were opened at the Navy ordinance bureau on August 26. The American and British Manufacturing Company, of Bridgeport, Conn., offered to supply the 8,000 common shells at \$6.74 each and 4,000 of them at \$6.99 each; 2,000 target shells at \$6.75 each, and 1,000 of them at \$7.22 each. The Bethlehem Steel Company's bid was 8,000 common shells at \$7.15 each, and half of them at \$7.29 each; for the 2,000 target shells, \$5.39 each, and for half of them, \$5.49 each. The Midvale Steel Company bid for 4,000 common shells, \$16.45 each, and 1,000 target shells, \$11.00 each.

New Ideas in Cast Steel Track Equipment

Illustrations herewith show new equipment being put on the market by the Pittsburgh Track Specialty Company, House building, Pittsburgh. The company will manufacture in addition to rail joints and tie plates all kinds of poles and posts that can be made of

the Pittsburgh & Lake Erie Railroad for six months. It has been tested in winter and summer, in extremely wet and extremely dry weather, and the insulation has never affected the electric block. This cast steel tie can be made in a variety of forms and can be made



Rail Joint.

cast steel and all varieties of cast steel ties either with plain or insulated bearings for the rails and such other track equipment as may be developed.

The development of the cast steel tie is in its infancy, but experiments with substitutes for wooden ties indicate that

double length and longer for use at switches and turn outs, and in any weight desired. It is especially adapted for use in tunnels owing to its construction and on heavy curves where it will hold the track securely.

The cast steel tie for girder rails also

The cast steel tie plate shown is also in service and has demonstrated that it will hold rails in position under the most trying conditions. It is interlocking and when spiked in position clamps a rail permanently. It is to be used in connection with a wooden tie and by reducing the shock adds materially to the life of the tie in addition to holding the rail securely.

The cast steel rail joint is a development of the tie plate. It has been in service both as insulated and non-insulated joints on the Pittsburgh & Lake Erie tracks near Glassport, Pa., where it has given good satisfaction. It can be modified to suit any condition and can be trussed in the middle of the joint if desired. One of these insulated joints has been in service on a particularly trying joint since last February and the insulation has not been changed since placed in position. Previously the average life of insulation at this joint was two weeks.

The cast steel rail joint is shown in the cuts as a boltless joint, but it can be made with the necessary holes to take the ordinary track bolts. It can also be modified to fit on one tie only—where it is desired to break joints immediately over a tie instead of between two ties.

The "Pittsburgh" rail joint has been in use enough to show that it has great advantages as an insulated joint. Because this joint supports the rail on the base the insulation is not subject to shear under the head of the rail—the life of the insulation will therefore be much longer.

It is well known that all rail joints



Cast Steel Tie for Girder Rail.

metal ties will be used exclusively in the future, and that cast steel ties have a number of advantages over other styles.

One of the ties for steam railroads like the insulated tie shown in an accompanying cut has been in service on

possesses a number of features which recommends it to traction companies for use on paved streets and improved roadways. Its wide base makes a solid support for the rail and when keyed into place the rail is practically immovable until released.

are of two kinds—base-supporting and head-supporting. The head-supporting joints have come, perhaps, more generally into use because they can be easily rolled and the base-supporting joints have always so far been more successfully made as castings. In fact it is

only within the last few years that the art of making steel castings has been so perfected that a first class cast steel rail joint could be made at prices that were in hailing distance of the rolled joints. The claim is made that the only rail joint that would stand the wear and tear of railroad service had to be of cast steel—and the high price of cast steel held back the development of the base-supporting joints. It is however now possible to make in cast steel the rail joints shown in the cuts and sell them in competition with the rolled head-supporting joints. In addition to the negative virtue of not shearing the insulation the base-supporting joints have the positive virtue of carrying the load of the train always on the base of the rail—the rail is thus under the same strain from end to end. The head-supporting joints necessarily, at each joint, at both ends of each rail, have to transfer the load of the train from the base

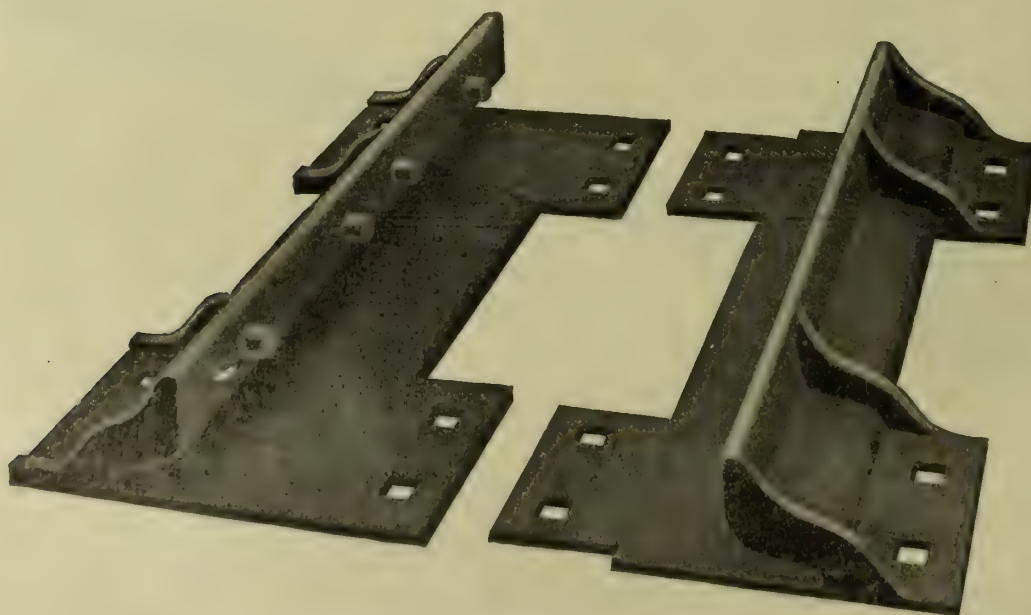
to the head—thus setting up unnatural strains in the web of the rail.



Tie Plate.



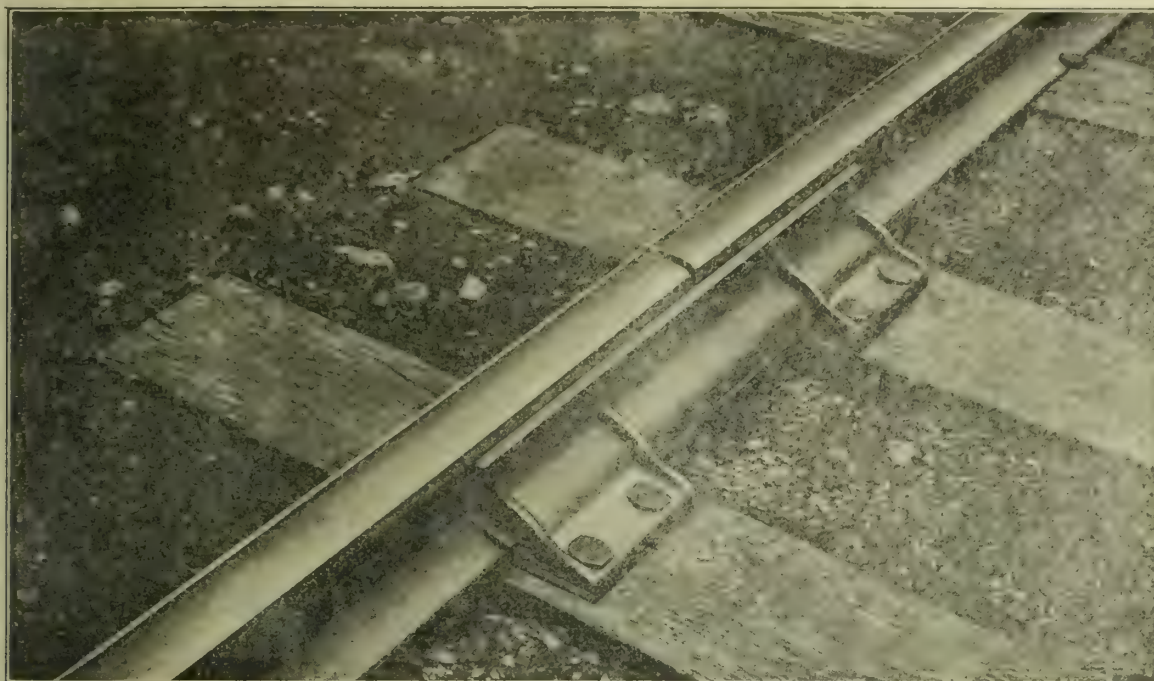
Cast Steel Insulated Tie.



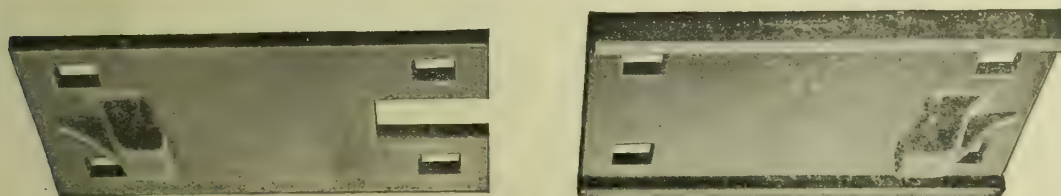
Boltless Rail Joint.

The company is making a proposition to railroads to equip a mile of track which is to be paid for only after, in actual service, it has been proved that this mile of road will be held in alignment, will protect the rail ends better, and will cost less for maintenance than any other will on the road.

The company is also prepared to engage in the manufacture of cast steel poles for special purposes and is filling an order for 74 30-foot cast steel trolley poles for the Butte Electric & Power Company, Butte, Mont. This is possibly the first installation of cast steel poles in the United States and it is attracting the attention of the management of a number of the trolley systems in the country. The cast steel pole is made considerably thicker at the ground line where all poles suffer most deterioration and where the strain is greatest.



Insulated Rail Joint.



Interlocking Tie Plate.

PERSONALS.

F. E. Richardson has been chosen president and treasurer of the Pittsburgh Forge & Iron Company, to succeed the late Calvin Wells. Mr. Richardson was formerly secretary of the company. W. I. Miller, assistant secretary, was elected to Mr. Richardson's place as secretary. The elections were made by the directors.

Previous to the selection of the new officers, the stockholders met and elected Benjamin Wells, a son of the late president, to a place on the board of directors.

John C. Anderson, of New York, has succeeded Arthur A. Brown as Pittsburgh representative of the Westinghouse, Church, Kerr Company, with offices in the Union National Bank building.

Charles F. Beltz, Machesney building, Pittsburgh, has been appointed Pittsburgh representative for the Mulconroy Company, Incorporated, New York. The company manufactures a line of flexible metallic hose for water, air, steam, gas,

oil and other fluids, and the Mulconroy coupling.

Frederick F. Fischer, formerly with the Fischer Foundry & Machine Company, Pittsburgh, has succeeded George Webb as Pittsburgh representative of the DuBoise Iron Works, with offices in the Park building. Mr. Webb has been transferred to New York.

W. Owen Davis, division freight agent of the American Steel & Wire Company, with headquarters at Pittsburgh, has been transferred to Chicago.

President William H. Taylor, of the Goodwin Car Company, who has been in France for the past two months, will sail for the United States on September 3.

J. C. Maloney, former superintendent of the rod, wire and nail department of the Youngstown Sheet & Tube Company, been offered the superintendency of a new plant at Kenova, W. Va.

President W. E. Corey, of the United States Steel Corporation, is expected back at his desk this week after having

been laid up two weeks with a dislocated ankle received while on a yachting trip.

J. A. Durfee has been appointed general superintendent of the plant of the Southern Iron & Steel Company, Gadsden, Ala. A. W. Taylor, now with the Atlanta Steel Company, Atlanta, Ga., will be superintendent of the open-hearth and blooming mill departments of the Alabama City plant of the Southern Iron & Steel Company.

The independent steel manufacturers of the country have appointed a committee to arrange for a dinner to be given to Judge E. H. Gary, chairman of the United States Steel Corporation, on October 15.

PLANT GOES AT AUCTION.

The Roanoke Stamping & Enameling Company's plant will be offered at public auction on October 4. This plant includes buildings, lands, machinery, fixtures, equipment, etc., for manufacturing enameled and stamped ware. Its main building is 100x125 feet. Details can be obtained by addressing James A. Bear, trustee, Terry building, Roanoke, Va.

An Improvement in Corliss Engine Construction.

The Wisconsin Corliss Releasing Gear for Higher Speeds, with Many Constructural Features Designed Primarily for Increased Steam Economy and Durability.

SINCE Geo. H. Corliss designed the valve-gear and built the first engine which bears his name, a long list of machine shops of various kinds have taken up the manufacture of this type of engine. Mr. Edwin Reynolds designed the chief modification of the original Corliss gear and these two designs have been copied by Corliss engine builders, some with scarcely a perceptible change even in detail, but most of them modified in some unimportant way mainly giving the respective engines some distinctive feature. Several freak gears have been produced and given up, but in the vast majority of cases there has been no attempt to improve the valve gear either in design or construction, to minimize wear, give better steam economy and better speed regulation.

The original Corliss valve-gear revolutionized high grade engine construction because it was and is yet, in the vast majority of cases, the means of securing the most economical distribution of steam in a prime mover. Its advantages are

demand for power delivered at a minimum cost, it is indeed surprising that so little apparent effort has been made to better the original design—remedy its defects and increase its scope; for it has both defects and limitations.

Ordinary Corliss valve-gears show a very considerable amount of wear after

the steam valve stems, and is the cause of very noticeable steam wastes, packing renewals and an increase in the friction

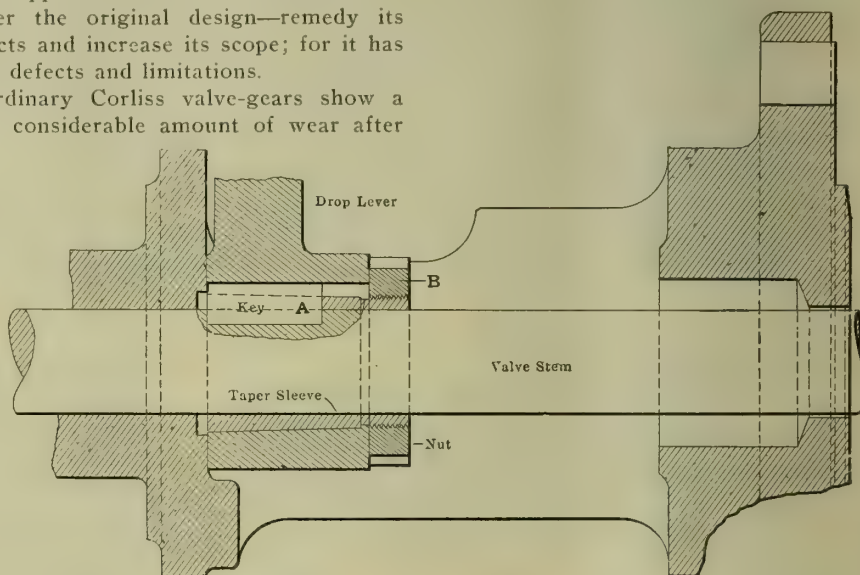


Fig. 2. Method of Securing Drop Lever to Valve Stem.

of the gear, as well as adversely affecting the speed regulation. Due to this as well as other points, the relative speed of Corliss engines has been limited whereas a quality greatly to be desired in a Corliss valve-gear is the ability to operate at higher speeds than have ordinarily been considered good practice.

Here it might be opportunely mentioned that an engine with a non-releasing valve-gear is not a Corliss engine. Semi-rotary valves were used before George H. Corliss' time, but he invented a trip—or releasing-gear to operate them and revolutionized the steam engine practice.

For many years 70 to 80 revolutions per minute was considered the limit; later 90 to 100 revolutions per minute were found to be safe speeds, but at the present time 120 revolutions per minute is a speed often used. Higher speeds are desirable because of the large saving in the first cost of installation, especially when the engine is direct-connected to a generator, and because it often makes it possible to get a Corliss engine unit of the desired capacity in a space which would otherwise necessitate the installation of a high-speed engine unit or a small turbine.

The gear here described is of exceptional interest because it has made possible speed of 150 to 175 revolutions per

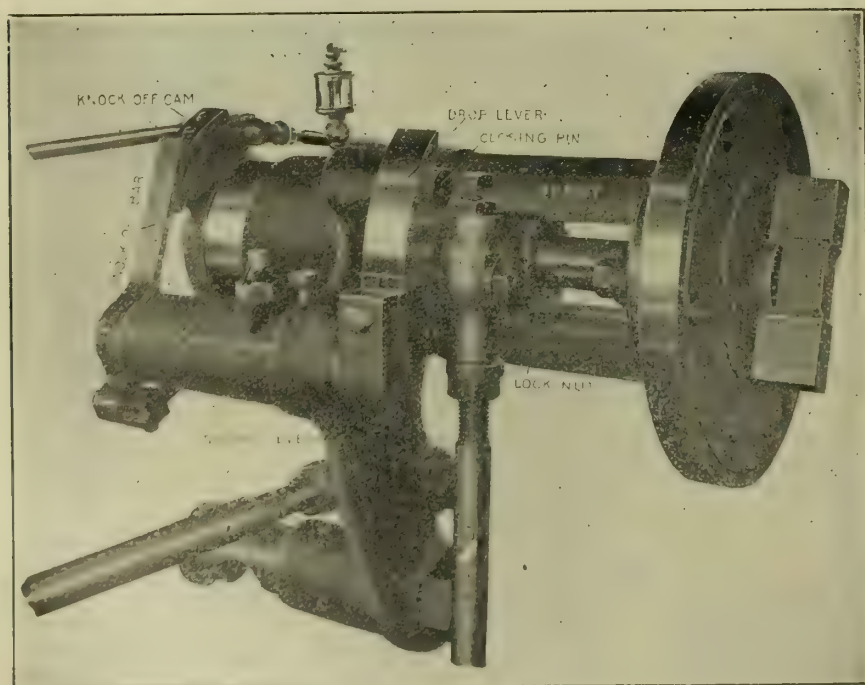


Fig. 1. Inside View of Releasing Gear.

nowhere more appreciated than in the manufacturing industries especially the textile mills, and in view of the enormous

they have been in service from one to three years. This is partly due to the long leverage on the unsupported end of

minute with perfect regulation, low friction loss, and a low steam consumption over a long term of service. It was designed in 1900 and first put into service in 1901 on engines built by the Brown Corliss Engine Company. Since that

of this gear it has been the endeavor to 1, that the drop lever is inside the bonnet, rising and falling through the inside opening in the casting. Besides bringing the valve gear nearer to the cylinder, this construction offers the additional ad-

by means of a split taper-sleeve set up with a lock nut, as shown in Fig. 2, and locked together as firmly as though these pieces were formed from one solid forging.

The steam lever has a long bearing on the bonnet immediately outside of the drop lever, and carries the trip pin and trip steel by which the drop lever is engaged and the steam valve is opened. The trip steels are square and interchangeable, and, in accordance with the best practice, are made so that any one of the eight sides may be used as a wearing surface. An annoyance which is frequently met with in Corliss engine operation is the wearing away or sudden breaking off of the edges of these steels and the consequent refusal of the drop lever to pick up and open the steam valve; this is obviated in the design under consideration by an arrangement for controlling the lap of these steels while the engine is in motion. The trip pin, shown in Fig. 3, contains a V-shaped recess, one side of which is held by a flat steel spring against the adjusting screw, also shown in the figure. Adjusting this screw varies the relative positions of the two steels, so that their lap may be increased when required, without stopping the engine.

In the foregoing illustrations the automatic closing pin undoubtedly will have received attention. This is another valuable feature of this gear, and, as apparent in Fig. 1, it is held in the casting of the steam lever. Ordinarily it performs no service, but should the dashpot for any reason fail to close the steam valve, the closing pin forces down the drop lever and closes the valves mechanically, thereby making it impossible for

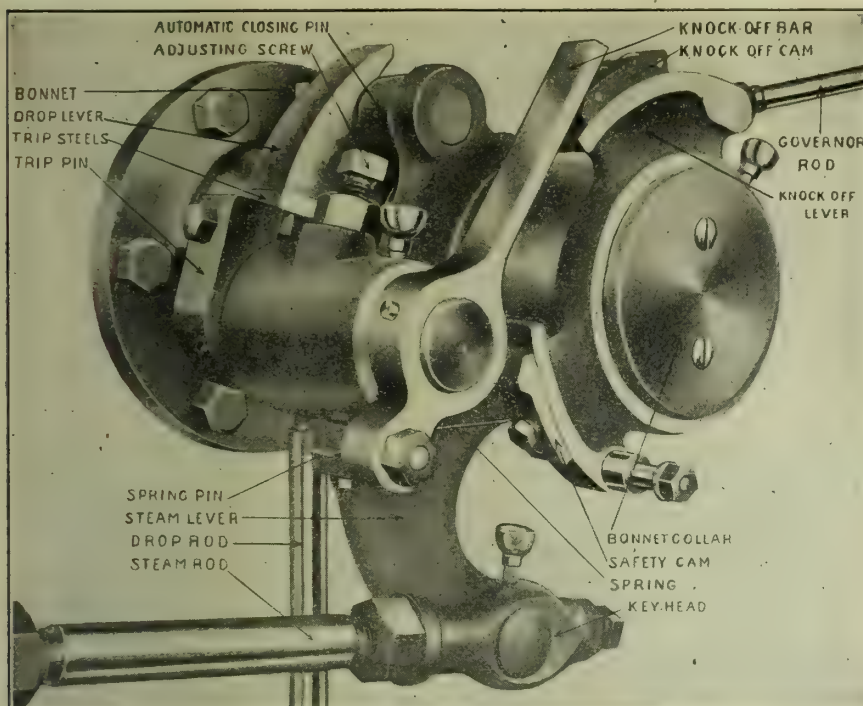


Fig 3. Outside View of Gear.

time it has been applied to all the engines built by the company and its successor, the Wisconsin Engine Company, at Corliss, Wis.

The valve gear contains many constructional features of interest. In the design

vantage of giving a substantial bearing to the valve stem on each side of the point where the turning movement is applied. One of the peculiarities of this valve gear is the method of attaching the drop lever to the valve stem; this is done

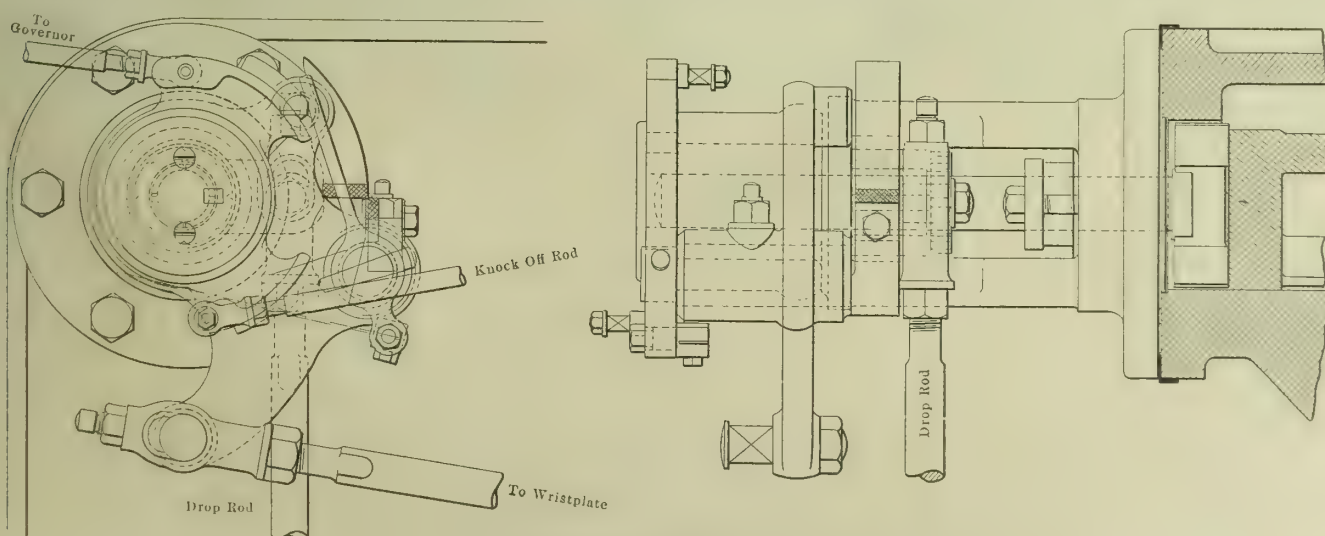


Fig 4. Front and Side Elevations of Valve Gear.

have the parts subjected to the most strain placed as near the cylinder as possible, to get the benefit of rigid support and to reduce the leverage of the gear on the bonnet. Thus, it will be noticed in Fig.

held to the valve stem by friction as well as the key A, against which the split edges of the taper sleeve snugly fit. When the nut B is driven up, the valve stem, key taper sleeve and drop lever are

the engine to take steam on both ends of the stroke at the same time.

At the outer end of the bonnet, where they are accessible for inspection, are carried the lighter parts of the gear, such as

the knockoff bar, cam and lever, thus carrying out the idea of bringing the heavy work of the gear near the point of support and the lighter work farther removed; this minimizes the strain on the bonnet casting and preserves the alignment necessary for close-fitting parts, minimum friction loss and close regulation by the governor. It will be noticed in the end and side elevation of the gear, Fig. 4, that the knockoff lever through which the governor controls the cutoff is so placed at the outer end of the bonnet that it is absolutely free from disturbances by the other working parts. There is but one light rod connecting the governor lever with the knockoff lever on the bonnet at the crank end of the cylinder, and a light rod connecting the crank-end knockoff lever with that on the head-end bonnet; this not only dispenses with the

are provided to insure continuous operation at these speeds and the gear is set so that the governor controls the cutoff from zero to seven-eighths of the stroke—a long-range valve gear.

When the engine is standing idle, the governor collar rests on two lugs which prevent it from assuming its lowest, or safest, position; this enables the engine to take steam and start off in the same manner as a slide-valve engine, the engineer simply opening the throttle and paying no attention to the governor or the valve gear.

Improvement such as this promise the awakening of new interest in the Corliss engine, of which so little has been heard for a long time. Vast millions of horse power is being developed by the Corliss engine. It is by far the most reliable piece of machinery in many and many a

similar conditions, excel the turbine in steam economy, and should they receive half the study and remarkable energy accorded the development of the turbine, it is not at all rash to predict the rapid restoration of the Corliss engine to its real position at the head of steam prime movers.

INSPECT OIL CITY PLANT.

The newly completed plant of the Oil City Boiler Works was inspected on August 30 by William N. Kratzer, of William N. Kratzer & Company, Pittsburgh, who had the contract for the construction of the shop. Construction work was started early last January and the work has been pushed rapidly to completion. It was built in sections so

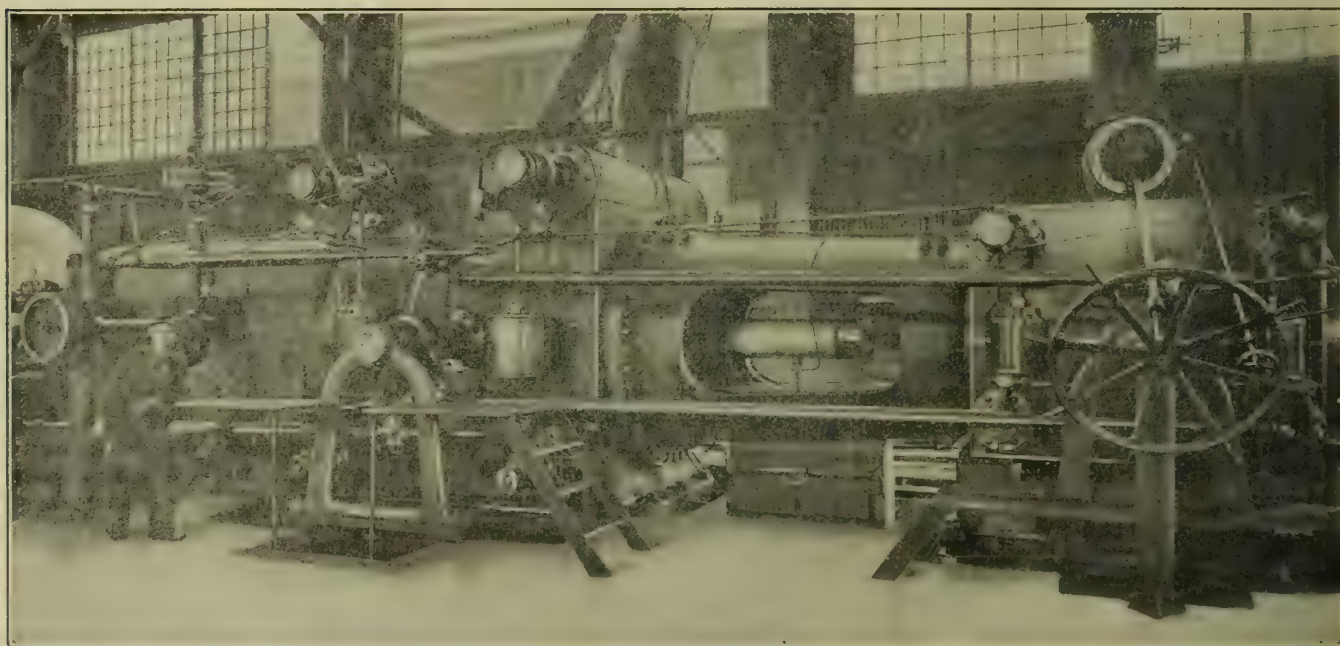


Fig 5. Valve-Gear Side of Wisconsin Corliss Engine.

long rod and its lever between the governor and the head-end bonnet, but greatly reduces the weight and consequently the inertia of the parts which must be moved by the governor to control the cutoff. The governor and gear consequently work in harmony to secure close regulation.

On 'Higher Speed' Corliss engines no wristplate is used on the steam valves, the motion being transmitted through straight rods direct from the eccentric. This considerably reduces the weight of the steam valve driving gear, and by the use of double-ported valves, both steam and exhaust, the movement and momentum of the moving parts are decreased, making everything favorable to the high speeds previously mentioned. Ample wearing surfaces and lubrication facilities

plant, and being the very heart of the plant's operation, it is hard to overestimate the service rendered this great country by the machine, the rotation of which might be said to be the pulse of our manufacturing industries. At present the steam turbine has been occupying the public attention, talked of on every occasion, urged for every service, installed under any protest regardless of physical conditions. What might almost be called a turbine "fad" has been kept at fever heat despite the fact that there have been almost as many turbine disappointments as there have been successes, for steam turbines have some very marked limitations.

With careful attention paid to design and details the best Corliss engines of to-day will, in almost every case under

as not to interfere with the operations of the plant. One-half being completed, the machinery from the old plant was moved into it and the tearing down of the dismantled structure which covered a portion of the site of the proposed new building took place. The building as it now stands is 355 feet long by 180 feet wide. The frame work of the building is steel. In the south end of the building is the riveting tower 25x60 feet, the roof of which is 70 feet from the ground. The shop is equipped with two electric traveling and hoisting cranes, one of 25-ton capacity, the other a 5-ton one. Another 10-ton crane will be installed in the near future.

Try a Want or For Sale ad in the Industrial World.

INDUSTRIAL FIRES.

Traverse City, Mich.—Fire of unknown origin, August 30, destroyed plant of Traverse City Manufacturing Company and building and contents of Pere Marquette Railroad Company division headquarters. Loss, \$25,000; partially insured.

Jamestown, N. Y.—Fire in wrench factory of W. Hjorth & Company in Taylor street, August 27, caused trifling loss, but the damage by water will amount to several thousand dollars. Insurance covers about one-third the loss.

Waverly, Ia.—Exploding gasoline tank caused a fire that destroyed the Kelly Canning Company's plant August 27. Building valued at \$100,000, and 3,000,000 cans of corn burned.

Leesburg, Pa.—Sharon Coal & Limestone Company sustained loss, estimated at \$25,000 at its limestone plant August 29. Crushers and buildings are a total wreck.

Traverse City, Mich.—The Traverse City Manufacturing Company's plant destroyed August 25. Loss estimated at \$35,000, with \$19,000 insurance.

Birmingham, Ala.—Plant of the Southern Paint Manufacturing Company destroyed by fire August 23. Loss, \$60,000. Heavy insurance carried.

Amhurst, Wis.—Plant of the Pioneer Graphite Company, near Junction City, destroyed August 28. Loss, \$30,000. Insurance, \$6,000.

Somerset, Pa.—Plant of Somerset Door & Column Company destroyed August 22. Loss, \$52,000. Insurance, \$12,000.

Pittsburgh, Pa.—Warehouse of J. A. Blanck Storage Company and contents destroyed September 1. Loss, \$120,000.

Manito, Ill.—Springfield Filter Company's plant total loss August 26; damage, \$50,000; insurance, \$26,000.

Toronto, Ont.—Estimated loss on Tudor's carriage factory at Orillia, \$500,000. Insurance, \$250,000.

Greenwood, Ark.—Tipple of Mine No. 2 destroyed by fire and explosion August 23. Loss, \$40,000.

Louisville, Ky.—L. P. Hyman & Company, wholesale plumbers; loss, \$5,000, August 27; insured.

Jackson, Mich.—Plant of Jackson Cement Block Company destroyed August 23. Loss, \$2,500.

Bowling Green, O.—Lightning fired

three oil tanks, each containing 35,000 barrels, belonging to the Ohio Oil Company at Cygnet, August 28. Loss, \$100,000.

Oldtown, Md.—Engine house of Kulp Lumber Company destroyed August 23. Loss, \$10,000.

Winnipeg, Man.—The McClary stove warehouse gutted August 28. Loss, \$250,000.

REVIEWS.

Machine Tool Bulletin No. 8, issued by the Morse Chain Company, Ithaca, N. Y., contains a number of illustrations of the application of the Morse silent chain driving machine tools of various descriptions and a description of the company's new type No. 23, high speed chain. The new chain is made of improved material, has more effective length of teeth, increased bearing surface of pins, pins keyed securely in links, radius of curvature of rocker increased 300 per cent, increased thickness of links and pins, chain of one design on all sizes of sprockets, and increased elasticity due to higher arch of link.

The Lidgerwood Manufacturing Company, New York, manufacturer of hoists and hoisting apparatus for all purposes, has issued a 200 page 9x12 catalog artistically illustrated with reproduction of the various parts of boilers, engines, hoisting apparatus and all appliances are minutely described and all necessary tables of sizes and capacities are presented. Installations in mines, quarries, lumber camps, excavating, unloading ships at docks and coaling ships at sea are reproduced and a fund of valuable information is presented.

Bulletin No. 64 issued by the Universal Portland Cement Company, Chicago and Pittsburgh, is illustrated with views of the Cantwell Printing Company's building, Madison, Wis., which is constructed throughout of reinforced concrete; concrete cells in the Allegheny county, Pa., workhouse; concrete foundations for the new city building, Indianapolis, Ind., and a concrete switchboard for the Ohio Steel Works, of the Carnegie Steel Company, Youngstown, Ohio.

Wililam E. Quimby, Incorporated, New York, has issued bulletins describing the Quimby screw pump, submerged pumps, elevator and house service pumps. The pumps are built in sizes up to 2,800 gallons per minute and are supplied either for belt drive or direct connection. They have an absolutely pulseless delivery, especially valuable in many installations.

The Berger Manufacturing Company, Canton, Ohio, manufacturer of eaves

troughs, conductor pipes and malleable iron specialties, has issued a bulletin describing the adjustable shanks and circles for supporting eaves and conductors, conductor pipe fasteners, wire hangers and other specialties.

THE MAN WHOM GOD DESPISES.

There's a fellow in Missouri, Bodine by name, who splatters printers' ink around, and who is evidently a person who has had a varied and not altogether lovely experience in meeting men. However, he is one who draws conclusions and a moral from his observations, as witness:

"Whatever you do brother, don't get too good. There is a piety that is depressing, and which immediately breeds suspicion and distrust. Every man has his faults, and if our secret acts and thoughts, or those things people know about us, but which we think they don't know, were held up to the public we would shrink, cut to the quick, and flee to hide our moral and spiritual nakedness. Some of us get drunk, and that's bad; some of us lie like Arabs, and that's worse; some peddle vile talk, and that's worse yet; some of us love money better than we do truth, honor and goodness, and that villiany; some of us cheat, steal and dodge our taxes, and that's 'worse' still, though, among the elect, it is sometimes considered a virtue; but the crowning sin of all is a hard, unloving heart and a soul without charity for the frailties of others, which rejoices when others are crucified, which attempts to hide its secret joy with sniffing and pious deprecation. Men dislike such people, and God despises them. Whatever you do, don't get too good. Heaven is going to be a big surprise party to most of us."

NEW YORK CEMENT TESTS.

New York city is to make an exhaustive official test of the relative value of various fire-proofing materials, at an expense of more than \$10,000, before deciding finally upon that which is to receive the official mark of approval in the new building code as the material for the city's future skyscrapers.

Miniature buildings will be erected of the various materials offered and these will be subjected to conditions as nearly as possible identical with those which would prevail in a great conflagration.

On account of the difficulty of finding a suitable place for the experiments in the neighborhood of New York city, the tests, which will extend over a period of at least four months, may take place at the Chicago proving grounds of the board of fire underwriters. The latter has offered to allow the use of its property free of charge.

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CHANGING STEEL PROCESSES.

ONE need go back only a decade in the history of the American steel trade to find the employment of the different steel making processes in a totally different alignment from the present. In 1898 there was only one-third as much open-hearth steel made as was made by the Bessemer process. In 1908 the open-hearth output exceeded the Bessemer output. Other comparisons could be made between these years, but inasmuch as 1908 was a year of reduced total output, while 1907 saw a sharp decline in output towards the close, and 1906 was a year of sustained output, it is probably more interesting to make comparisons between 1896 and 1906, showing what was accomplished in that 10-year period, and then observe the changes which are taking place at the present time. We summarize the showing in the following table:

Production of Ingots and Castings, Gross Tons:			
	1896	1906	
Basic open-hearth..	776,256	9,658,760	
Acid open-hearth...	522,444	1,321,653	
Total open-hearth	1,298,700	10,980,413	
Bessemer	3,919,906	12,275,830	
Crucible	60,689	127,513	
Miscellaneous	2,394	14,380	
Total	5,281,689	23,398,136	

In 1896 the production by the open-hearth was almost equally divided between acid and basic; a few years earlier the output by the basic process was almost negligible. In the early nineties

open-hearth steel meant acid open-hearth steel and the basic process was looked upon with disfavor by engineers. The prejudice died hard but it is perfectly safe now to consider it dead. We do not mean that acid steel is not preferred; it is the prejudice which has died, not the preference. The two materials are regarded in their true light. Acid steel costs a little more money—not a great deal more—and is used when the buyer is willing to pay the extra. The preference is not strong, for the difference in price is so small that if the preference were strong we should not find, in 1906, seven times as much basic as acid open-hearth steel made. The preference is especially marked in the case of castings. It has remained the case, through 1908, that the production of castings by the acid process has exceeded that by the basic process, although in 1908 the preponderance was reduced to about one per cent.

In 1896 the total open-hearth steel production was one-third as large as the Bessemer steel production; in 1906 it fell short by only about 10 per cent. In 1908, a year of reduced output all around, the open-hearth output preponderated, and in the next year of full production all around it will still preponderate.

In the 10 years, 1896 to 1906, the production of crucible steel doubled, when total steel production quadrupled; crucible steel advanced only half as rapidly, in proportion, as total steel production.

In a general way it may be said of the decade 1896-1906 that crucible steel and acid open-hearth steel production advanced only moderately, while Bessemer steel production increased rapidly and basic open-hearth steel production advanced by leaps and bounds.

What has been the trend since then? The evidence is clear that the different processes are continuing the pace and in as marked a way. First, as to the Bessemer process. There was a new Bessemer steel plant completed and put in operation in 1906, a standard plant of two 10-ton vessels. Since then no new Bessemer plant has been built or projected, and there are none in sight. It is true some of the Bessemer plants have been increasing their production slightly, but that has simply been by rounding out facilities in plants already well established, and the future growth in this direction cannot be consequential. On the other hand, Bessemer plants have actually begun to disappear. Two years ago the Bessemer department at Duquesne made its last blow, and the department was immediately dismantled, giving place to open-hearth furnaces. At Homestead the Bessemer department has not been dismantled, but it has made

very little steel in the past two years. It may give way to other equipment in future. Meanwhile Bessemer ingots have been shipped from Edgar Thomson to Homestead.

In basic open-hearth steel the progress has been rapid. Since 1906 the steel corporation has completed, or nearly completed, three large and one smaller department. First, there is the great Gary plant, which will have 56 open-hearth furnaces. Then there is the new department at Duquesne, with 18 furnaces, and the 12 furnaces at Youngstown, while six furnaces were added at Lorain. The Youngstown and Lorain departments were the first to make open-hearth steel in the respective towns. Independent interests have been going heavily into open-hearth steel; the Jones & Laughlin Steel Company has been almost continuously increasing its open-hearth capacity. The Pittsburgh Steel Company built an open-hearth plant, the Standard Steel Car Company has started building one, the Republic Iron & Steel Company will shortly build one and a Southern Ohio interest will likely announce an extension shortly.

Thus, while basic open-hearth steel made rapid gains on Bessemer from 1896 to 1906, it has continued to expand rapidly since then, while the Bessemer process has experienced some actual backsets.

The latest development is in electrical steel refining. We have seen that neither acid open-hearth steel nor crucible steel has kept pace with total steel production, although they have made gains. The electric process will take up at least a large part of the gain which has been going to them. When common basic open-hearth metal can be partly refined by electricity for \$2 or \$3 a ton, and refined practically to the limit for about \$5 a ton, the older processes for making fine steel have little vitality.

The time was, only a few years ago, that Bessemer iron ores stood in a separate class; they were regarded as very much more valuable than ores of higher phosphorus and similar iron content. At no time has there been an actual scarcity of Bessemer ores, but expectations were that such a scarcity would come in the course of time, since it is generally admitted that, in proportion to total supplies, Bessemer ores are being mined more rapidly than non-Bessemer ores. To predict an actual shortage, however, means that the relative rate is to continue, and developments in the steel trade do not indicate this. Year by year the demand for non-Bessemer ores increases more rapidly than does the demand for Bessemer ores, and an adequate supply may be found for all the demand.

The rapidly increasing employment of

the basic open-hearth steel processes has wrought havoc with price relations between scrap and other forms of raw material. Until recently good heavy melting steel sold regularly at lower prices, delivered at steel works, than pig iron, but just in the past few months the relation has changed, scrap being higher than pig iron, and promising to continue so. From a metallurgical standpoint heavy melting steel has always been more valuable to the basic open-hearth steel works than pig iron, but commercially it has been otherwise, because the large steel works made their pig iron themselves, at a good profit and judged the relation not by current market prices, but by their actual costs of production. With the smaller steel works, not possessed of blast furnaces, the case is altogether different, for both pig iron and scrap must be bought. The time when heavy melting steel would command a higher price than pig iron, in the open market, has not awaited the time when total demand would reach a certain relation; it has awaited the time when the effect would be felt from the plants which buy pig iron as well as scrap. That time has arrived, the prospect being that through the future scrap will command considerably higher prices than formerly, referable to pig iron.

New relations will have to be established between Bessemer and basic open-hearth steel. It is a race between the tendency to exhaust the Bessemer ore reserves and the greater demand for scrap, each influence being in the direction of increasing cost of manufacture. A new balance will have to be found, the increasing price of scrap tending to give the Bessemer industry new life. It will survive for decades but with a constantly decreasing proportion of the total tonnage of steel made.

PITTSBURGH AS A STEEL CENTER.

A funny idea has gotten more or less vogue in the past year or two to the effect that a new steel producing district, Chicago, is going to take away Pittsburgh's prestige. Such a view shows an amusing lack of information as to the position Pittsburgh occupies and the growth the Chicago district is experiencing. Just to get a fair start in a comparison, let us quote a paragraph from page 36, of Mr. Swank's annual statistical report for 1888, 20 years before the latest statistics which are available:

"In 1887 Cook county, Illinois, made more tons of Bessemer steel ingots than Allegheny county, Pennsylvania, including the production of the Clapp-Griffiths plants and the Pittsburgh Steel Casting Company. In the same year it also made many more tons of Besse-

mer steel rails. In 1888 Allegheny county made the largest quantity of ingots, while Cook county retained the lead in rail production."

We fancy no one of those who lately have been looking for Chicago to out-distance Pittsburgh has the faintest notion that there was a time a couple of decades or so ago when Chicago actually had that lead. The shoe, as a matter of fact, is on the other foot; it is Pittsburgh which passed Chicago, long ago, and were any change in prospect in the future, it would not be a new district coming to the front, but a district regaining a position it lost 20 years ago.

Let us see now what occurred in the last year we have had of practically full production, 1907. We find that the statistics do not separate the Chicago district, but give the production for the two States, Illinois and Indiana, so we give Chicago the benefit of two great States, the production of steel ingots and castings in those States in 1907 being 2,924,237 tons. Passing to Western Pennsylvania we take the opposite course, and select from the statistics the production of one county, Allegheny county, and find 6,905,590 tons.

In 1887 Cook county, Illinois, made more Bessemer steel than Allegheny county, Pennsylvania; in 1907 Illinois and Indiana made 42 per cent as much steel of all descriptions as Allegheny county.

Now, as to the future: The Gary plant is built for eight blast furnaces, which will not produce over 1,200,000 tons of pig iron a year; if on that basis the plant gets enough outside material to make 2,000,000 tons of steel ingots it will do amazingly well. We give the Chicago district 5,000,000 tons of steel, to which it may work up; there is not a hint of new construction which will give it more than that.

As to Pittsburgh district we have Allegheny county's showing in 1907, 6,900,000 tons, not full capacity by any means, and allowing for the new capacity at Duquesne, the Jones & Laughlin plant in the city, etc., we have easily 8,000,000 tons. Then one may ask if Donora, Monessen, Aliquippa, Butler, etc., just outside the county, do not belong to Pittsburgh, to what district under the sun do they belong? With the Aliquippa and Butler plants completed one can easily see, within a radius of less than 35 miles from Pittsburgh, a total capacity of substantially 10,000,000 tons of steel ingots and castings. Against that is to be set a capacity in the Chicago district just half as great. So from making more steel than Pittsburgh in 1887, Chicago, aided by that Gary plant, will be in position a year or so hence to make half as much steel at Pittsburgh.

That, it may be gently suggested, is not supplanting Pittsburgh very rapidly.

A TWENTY YEAR RETROSPECT.

AN editorial in our issue of September 6, 1889, an even 20 years ago, comments on the advance in Connellsville furnace coke which had just occurred, to \$1.35, commending the advance in that the wage scale, as determined by a recent arbitration award, justified an even higher price, and in that the total amount of coking coal in the Connellsville basin was limited, and would be exhausted in 50 years. Another editorial comments on the absorption of several coke operations by the H. C. Frick Coke Company.

After pointing out that the Frick scale of wages is based on \$1.50 coke, while most of the other firms are paying according to the Jackson award, which was based on \$1.75, so that an advance in price to \$1.35 is moderate, the editorial goes on to say:

"In the second place, there can be no question of the fact that the coal in the Connellsville region is being rapidly worked out, and that in the very near future not only must Connellsville coke advance in price materially, but there will be some difficulty in securing the necessary supplies for the furnaces which now draw their fuel from Connellsville. The production of the Connellsville region in 1888 was roughly 5,000,000 tons (4,955,553). A fair production to an acre of coal is 5,500 tons of coke. In 1883 the late Mr. Hyndman estimated the amount at 72,000 acres. We have recently been informed by a gentleman very largely interested in the Connellsville region that the amount of coal remaining is not 50,000 acres. At any rate, taking into consideration the present production and the probable increase in the near future, we question if there is in the whole Connellsville region a 50 years' supply, and 50 years will be a very brief period in the history of the iron trade of this country."

Twenty years later we find 30 years given as the prospective life of the Connellsville region, which checks exactly with the above estimate of 50 years at that time. A great deal, however, happened in the meantime. While the maximum production to that time had been 5,000,000 tons in a year, the production has since (in 1906) reached approximately 20,000,000 tons in a year, while with ovens since completed the region has made to a point where it can do 25,000,000 in a year. The total production in the 20 years since that editorial was written has been in excess of 200,000,000 tons, which does not agree with the figures then quoted, which were 5,500 tons of coke per acre and less than 50,000 acres.

Market Conditions, Prices in Producing and Buying Centers

East and West Comes to Pittsburgh for Iron.

PITTSBURGH—The East and the West came into Pittsburgh market to buy iron during the week just ended, as a result of the failure of furnaces in both those sections to keep pace with the market, and all grades of pig metal in Pittsburgh market touched new high levels—Bessemer reaching the highest point since March, 1908. Saturday saw Bessemer evidently firmly entrenched at \$17 for this year's delivery; basic cannot be secured under a \$15.50 minimum, while foundry iron, under the stimulus of the outside inquiries, ranges from \$15.75 to \$16, Valley—prices delivered in Pittsburgh being 90 cents higher.

August's record of a series of clean advances of \$1 to \$1.50 in all grades of iron in Pittsburgh market—Bessemer having gained \$2.50 over its low point of \$14.50, Valley, made last May—threatens to have an immediate effect in several branches of the steel trade of precipitating advances that were not scheduled to occur until later in the year. The anticipated advance in shapes and plates cannot be held off much longer—in fact, some Eastern makers are already asking higher prices for structural materials. Steel bars, though still quoted at the 1.35c minimum at Pittsburgh, also are expected to go to 1.40 before the close of the month. Boiler and structural rivets have been advanced \$2 a ton and blue annealed sheets \$1 a ton. A serious shortage in Bessemer and open hearth billets has led to distinct advances, Bessemer billets selling up to \$25.50, or \$1.50 above the July price. The National Tube Co. also announced an advance of \$2 a ton on all kinds of oil country goods. No advance has yet been made on merchant pipe, though one is expected within 10 days; while cast iron pipe is commanding better prices with a general advance probable by the middle of the month.

For prompt shipments of steel bars, definite promises of prompt delivery are becoming out of the question. The delayed deliveries of structural materials from the rolling mills are also becoming a chronic condition in Pittsburgh district. Rail and equipment orders from the railroads also improved during the week, additional car orders having necessitated increases in capacity at the Butler car plant, while the Pressed Steel Car Co. has succeeded in getting some increased output from its crippled plant at McKees Rocks, despite the continued labor disturbances. The Pressed Steel Co. has ordered 300,000 steel axles from the Carnegie Company, which will be

rolled at the Homestead mills. New equipment orders given out by the railroads during the week just ended consisted in large part of locomotives and passenger cars, but the total lettings to local companies for steel freight cars were increased by some 2,500 cars.

The week closed with an absolute minimum on Bessemer pig iron for this year's delivery of \$16.75, Valley, with one sale as high as \$16.90, Valley, and many furnaces refusing additional business for this year at anything under \$17. Sales were made early in the week for first half of 1910 delivery at \$17, but it seems likely the next sale will show an advance of 25 cents. The furnaces seem determined to put Bessemer up to \$17, Valley, for immediate delivery, at which point it may be expected to remain until well into October, at least.

Lots of 1,500 tons and 1,000 tons were taken up early in the week, for delivery during the first half of 1910, at \$17. Another lot of 5,000 tons for delivery up to November sold at \$16.75.

With the Eastern furnaces completely out of the market on basic iron for this year's delivery, Eastern buyers came into Pittsburgh market during the latter part of the week with inquiries for a total of 15,000 tons of basic. Sales already had been reported from Philadelphia of Eastern basic at \$18, and it was generally conceded that the newcomers in the market would be asked to pay \$15.75 or \$15.85, Valley. The \$2.65 freight rate to the East would make the price \$18.40 or \$18.50, delivered in Philadelphia. One of the Eastern inquiries resulted in a sale of 5,000 tons for September and October shipment on the basis of \$15.75 at furnace in this district, but not in the valleys. A Chicago buyer also was in Pittsburgh market with an inquiry for 5,000 tons of basic for prompt delivery.

Foundry interests also added to the activity in the iron market. One local consumer took 5,000 tons of No. 2, part at \$15.75, Valley, for this year and the remainder at \$16 and \$16.25 for delivery during the first quarter of 1910. One interest, which is said to have been selling under the market, is reported to have advanced its price after taking orders for about 9,000 tons at the lower figure. Some buyers claimed they had been able to shade the price of \$16 Valley somewhat for first half business.

The average on Bessemer for the month of August was \$16.23, Valley, an increase of 76 cents over July. The month's average on actual sales of basic was \$15.27, an increase of 27 cents over July. The Bessemer and basic averages,

Valley basis, through 1908 and 1909 have been as follows:

	Bessemer.		Basic.	
	1908.	1909.	1908.	1909.
January	\$18.10	\$16.44	\$17.10	\$15.50
February	17.00	15.88	17.00	15.19
March	16.96	15.44	16.00	14.94
April	16.59	14.90	16.00	14.15
May	16.03	14.58	14.83	14.12
June	16.00	15.23	15.25	14.94
July	15.83	15.47	14.49	15.00
August	15.21	16.23	14.62	15.27
Sept.	15.00	....	14.27	....
October	14.58	....	14.25	....
Nov.	15.84	....	14.93	....
Dec.	16.50	....	15.50	....

Average\$16.14 \$15.35

Fannie furnace, at West Middlesex, operated by the M. A. Hanna interests, was blown in during the week on standard Bessemer. Clinton and Kittanning furnaces blew in during the week, on foundry and basic respectively. Cherry Valley furnace, at Leetsdale, changed from foundry to malleable iron. Some low phosphorus iron was sold during the week in local territory at \$20.50, delivered Pittsburgh.

The rapid advance in coke during the fortnight just closed has aided the activity in the iron market. The output in the Connellsville region is now at its highest point this year. Several actual sales of standard Connellsville were reported at \$2 Connellsville, for prompt shipment. The absolute minimum has been \$1.90 for the past week, and it is doubtful if any more can be had at that figure. Fifty cars of furnace coke were sold in one day, for shipment this week, at \$2 straight, while \$2.15 to \$2.40 is being asked for 72-hour furnace coke.

Business in sheets and tin plate reached new heights during August, the American Sheet & Tin Plate Co. having entered during the month 25,000 tons more business than during any midsummer month in its history. The heaviest specifications in two years are being filed by the car roofing companies. More independent companies have followed the lead taken by a few, two weeks ago, and have advanced prices \$1 a ton over the minimum in the sheet trade. The leading interest also has made some changes on blue annealed. In tin plate some interests are unable to promise deliveries in less than 10 weeks. The matter of next year's prices is still indefinite, although some independents are asking \$3 to \$5 a ton over the \$3.40 per box price.

Contracts for three new freighters placed in Cleveland, will require 15,000 tons or more of shapes and plates which will come from Pittsburgh mills. In structural

contracts, the week has been quiet, though the mills are well filled up. The American Bridge Co. has taken contracts for 10 additional steel barges for the American Steel & Wire Co., to be used in Pittsburgh harbor. The lot will contain about 600 tons of steel. This will give the Steel & Wire fleet a total of 30 barges.

Increased Activity Threatens Famine in Iron in West.

CHICAGO—The railroads are specifying liberally on running contracts in rails and structural materials, and the week just ended has been the most active of the midsummer season in finished and unfinished steel. The Rock Island System's large orders for steel cars and equipments, including passenger cars, locomotives and a liberal allotment of track supplies, have placed the shops at Pullman on a basis where double turn will be necessary for the balance of the year. Boiler and machinery manufacturers also are coming into the market for additional iron to run them through the balance of the year. The structural business has seen some good-sized lettings. The Brooks Estate building, Chicago, 2,100 tons, will be fabricated by the Brown & Ketcham Iron works, which secured the contract from the George A. Fuller Company, Chicago. The American Bridge Company took the order for 5,600 tons for the Interstate Transfer Company's bridge at Duluth. The McClintic-Marshall Construction Company, Pittsburgh, were awarded the work for the new car shops of the American Car & Foundry Company, Detroit, 700 tons, and a paint shop for the Whipple Car Company, Chicago, 200 tons. Lettings of structural steel contracts in this district for the week amounted to over 22,000 tons.

All of the 14 open-hearth furnaces in operation at Gary are running on rail steels, so that the billet mill there has not yet been able to very largely increase its output. Preparations are being made to start six or seven furnaces at the No. 3 plant there, which will furnish soft steel for the merchant bar mills.

Northern iron has advanced to \$18.50 in this market, with little to be had during the remainder of this year. Most inquiries are for first quarter of 1910, though it is admitted that the recent influx of new business to the foundry and machinery makers will mean additional demand for iron before January 1. About 10,000 tons of Hanging Rock iron has been sold here, which about cleans up the offerings for the present year. It is evident that if some of the large consumers of basic and foundry irons find that they need additional material

for this year's deliveries they will have to go East for it. Some Birmingham iron has been offered here during the week at \$14, Birmingham, for delivery during the first half of next year. The last prices quoted on Alabama iron for 1910 were around \$13.50. Some sales have been made at that basis, though many of the local interests still hesitate to go past the \$13.50 mark, even for the first half of 1910.

Sales of nearly 6,000 tons of scrap by the Burlington and the Rock Island during the week failed to break the stiff market that has ruled for a fortnight. No. 1 railroad wrought brought from \$15.15 to \$15.35. The material was all taken locally. No. 1 cast brought \$14.55 and malleable scrap \$14.80. In a few cases, the scrap market has made a slight advance during the past six days.

Rail Situation Better; Price Advances Forecasted.

NEW YORK.—Aside from the increasing prices of coke, and the flurry caused by a decided shortage in the market on almost all grades of iron, the important development of the week in the iron and steel trades came in the movement in rails and track supplies—a considerable portion of the purchases by the railroads being for this year's deliveries. There were also unmistakable indications of price advances at an early date in merchant and iron pipe, and in structural materials.

The Chicago Great Western took 12,000 tons of open hearth rails for this year's delivery, from the Steel Corporation. The Baltimore & Ohio closed for 3,000 tons of Bessemer standard rails, which probably will be rolled in the Pittsburgh mills. The Steel Corporation also closed with a Western switch and frog company for 10,000 tons, and scattering sales amounted to 10,000 tons more of standards.

For next year's delivery, the Southern Railway's order for 40,000 tons, already noted in these columns last week, was apportioned. 28,000 tons of open hearth with the Tennessee Coal & Iron Co. and 12,000 tons of Bessemer with the Maryland steel. The Atchison, Topeka & Santa Fe placed 35,000 tons with the Illinois Steel for next year, with provisional reservations for 40,000 tons more. Accompanying this order is one for 45,000 tons of tie plates. The Missouri Pacific asks reservation on 40,000 tons. The New Haven and the New York Central also are preparing to place large tonnages for 1910. The activity of the Western roads in getting into the market for 1910, as compared with the tardy consideration given next year's requirements by the Eastern roads, is explained by the fact that the Western roads are anxious to

engage deliveries from the Chicago and Gary mills, and avoid paying higher freight rates from the Eastern mills.

In cast iron pipe, substantial contracts are pending including one from the West which will call for about 22,000 tons. Southern pipe lettings pending during the coming week will add a half more to this tonnage. The United States Cast Iron Pipe & Foundry Co. reported lettings to Springfield and Boston interests during the week of about 1,000 tons. Wrought iron pipe dealers in the East are 30 days behind on contracts. There is little activity in merchant pipe, the largest sale reported for the week being of some 600 tons for export to Honolulu.

The upward tendency of pig iron, however, promises to bring an increase in iron pipe within a few weeks. Prices already are much stronger. Higher prices also are expected in some steel lines, notably in structural materials. The Bethlehem Steel Co. the past week has been asking 1.50c for structural materials, at mill, which is equivalent to 1.57, New York. A general advance can be expected before the middle of the month. Structural lettings during the week, however, were rather light. Bethlehem and Pennsylvania Steel are reported to have secured several moderate New York and Boston lettings. There is still much delay in getting out materials.

The blowing in of additional capacity in Eastern Pennsylvania did not seem to help the local pig iron market. The General Electric placed its order for 8,000 tons of foundry for this year, on the basis of \$17. Eastern furnace. Prices for spot delivery on foundry and basic grades advanced to the figures at which 1910 iron was quoted a week ago, under the impetus given the market by the shortage throughout the week. Buffalo furnaces, after selling considerable business for next year's delivery at \$16, Buffalo, are now holding at \$16.25 for 1910, and quoting the \$16 price for immediate delivery.

Limit Is Reached on Eastern Furnace Production.

PHILADELPHIA. — Announcement of new furnace projects which will materially increase the pig iron production in the East next year, reflect present conditions in the local iron market. The present furnaces have utterly failed to keep pace with the demand. The scarcity of prompt basic has been an almost painful feature of the market during the week just ended. One Philadelphia melter secured a good tonnage of basic from a furnace in Pittsburgh district, and even then did not get all that he required. Others are in the market in Pittsburgh for iron, and have received quotations on Valley iron on the basis of \$15.85 Valley, or \$18.50 delivered in Philadelphia. A

considerable tonnage can be marketed here at that figure.

Meantime, announcements will soon come from the Bethlehem Steel Co. of plans for two additional furnaces; from the Eastern Steel Co., at Reading, of two additional open hearths; for more furnaces in the Buffalo district, and for other extensions. One new furnace of the Berkshire Iron Co., at Sheridan, went in blast during the last fortnight, and another at Pottstown will be blown in this month. The Keystone and Emaus furnaces will be in readiness to resume about October 1, the recent improvements having considerably increased the capacity there. Extensive improvements are about to be announced at Reading.

Further selling of Eastern basic for 1910 delivery was a feature of the week just ended. For this year's delivery one or two purchasers took up the last available lots, perhaps 6,000 tons in all, at \$18 Philadelphia. For 1910 delivery, Eastern furnaces are getting \$18 and \$18.50, delivered. Several thousand tons of Virginia basic also were placed in this territory for delivery during the fourth quarter at the \$18 figure, delivered.

Eastern Pennsylvania No. 2X foundry iron is practically on a uniform basis of \$17, furnace, for all the balance of this year, which is equal to \$18, delivered—with producers not especially anxious to sell, even at these figures. Sales of moderate lots of No. 2X for next year's deliveries have been made at \$18.35, and as high as \$19, delivered, though the present excited tone of the market is not conducive to closing extensive contracts for 1910.

The demand for semi-finished steel, already strong, has been increased by the appearance in the market of the ship-building companies, with inquiries for the supplies for the new battleship contracts; the Pennsylvania Railroad, which still needs considerable quantities of steel at its Altoona shops, and the locomotive manufacturers, whose recent bookings of new orders have brought them to the front for additional requirements for this year.

A heavy order for frogs, switches and track supplies has been received by the Pennsylvania Steel Co. from the New York Central. The company also is rolling 16,000 tons of steel for the structural bridge work for the proposed New York, Westchester & Boston extensions.

Old materials show increased strength, notwithstanding the claim of the newly formed combination that heavy melting scrap is still available in liberal quantities on the \$17 basis, and the pending sale of large quantities of scrap from Panama. Extensive purchases of low phosphorus scrap for early delivery are reported at \$20.50, delivered.

Sales of Ohio Tonnage Fix Prices on 1910 Deliveries.

CINCINNATI.—Sales of considerable tonnage of Birmingham and Southern Ohio foundry irons for 1910 during the past 10 days have pretty well fixed the present quotations for first quarter deliveries. Alabama furnaces have taken contracts for a large quantity of No. 2 foundry at \$14, Birmingham, all for first quarter. As a rule this business was not solicited, and some furnace interests closed with considerable reluctance, evidently believing a higher price would be possible. There is a feeling here that within a month no more Birmingham iron for next year will be available under \$14.50, furnace.

For Southern Ohio No. 2 foundry, sales for next year's delivery have been on the basis of \$15.50, and a number of interests now announce that they have no more iron for 1910 under \$16 furnace. Consumers apparently are pretty well covered for the present year, in some instances low priced iron bought for prompt delivery having been allowed to lie in the furnace yard. Some sales of No. 2 Alabama iron for prompt delivery are reported at \$13.50, Birmingham, but few consumers are in the market for spot iron. A Michigan melter who wanted 7,000 tons of foundry for this year's delivery is reported to have closed with a Northern furnace. Ohio furnaces, as a rule, have advanced quotations on this year's deliveries to \$15.50 for No. 2 foundry.

Advances asked for Connellsville coke have taken some of the Ohio furnaces by surprise. Advances in the Connellsville field to \$2.25 at ovens, for foundry coke for this year, rather took the breath of the local market. All other grades have risen in sympathy, and Pocahontas foundry coke is quoted at \$2 and \$2.25, with furnace coke for last half delivery \$1.85 and \$2. The minimum on Wise county coke for this year is \$2, ovens, for foundry and \$1.75 for furnace grades. Even at these figures, the coke interests look askance at long-time contracts.

Birmingham Iron for 1910 Touches the \$14 Mark.

BIRMINGHAM—September opens with increased activity in the iron market and with an advance of 50c for 1910 delivery, the price for No. 2 foundry iron being 14 per ton. This advance has been anticipated for some days the upward tendency having been strong ever since the market recovered from the slump of several months ago, when the price dropped to \$11 per ton for No. 2 foundry. The maximum has not yet been reached, in the opinion of the makers, and talk is now heard of \$15 iron before the end of the year.

The buying movement for the new year was first felt by the Alabama Consolidated Coal & Iron Company. This concern booked a large order for delivery during the first quarter of the new year at \$14 per ton. Inquiries indicate that the furnace companies will be kept busy during the new year. Practically their entire output for the present year has been disposed of by most of the manufacturers.

Several idle furnaces were repaired and put in order during August, and the month will show a substantial increase in production over the July record. Other batteries are now being made ready for the torch, and the September output will show a gain also. Premiums are being paid for spot shipments and for special brands.

The fact that 28,000 tons of steel rails is to be manufactured at the Ensley plant of the Tennessee Coal, Iron & Railroad Company insures the running of this big mill almost indefinitely. Several heavy orders, including one for 50,000 tons from South America, has been booked prior to this order from the Southern, and the business on hand with that in prospect makes the outlook for the rail industry in this section exceedingly bright. Pig iron is also beginning to move from this district to South America. This shipment was of a special brand and brought a price above regular quotations. Other shipments are expected to follow.

The demand for coke is on the increase and the coal mines of the district are rapidly filling up with them. Scores of long idle coke ovens are being lighted and repairs are being rushed on others. The demand upon the railroads for cars is increasing rapidly, and while the carriers have been able to care for the business in a very satisfactory way up to this time there are signs of an approaching car shortage and the roads are hustling to get all the available equipment in shape for operation.

COKE ON HIGHER LEVEL.

With the scarcity of labor in the coke regions only partially conquered, coke prices during the week just ended reached a new high level. Standard furnace coke cannot be quoted under \$2 for immediate shipment, and the range on foundry coke is \$2.15 to \$2.40.

There are still out of blast in the upper and lower Connellsville regions over 4,000 independent ovens or approximately 30 per cent of the total independent ovens in the Connellsville region, in addition to about 2,000 ovens of the United States Steel Corporation which are also idle. Some of these plants would resume under present conditions, but the labor is not available. During the past

three months, shipments of some companies have increased as much as 75 per cent owing to greater blast furnace consumption. The Steel Corporation has also picked up some coke in the open market. The output has now, however, reached 93 per cent of the best rate ever recorded, which was a shade under 430,000 tons in a week, done at the close of the third quarter of 1907. According to the Connellsville Courier's report for the week ending August 29 the production increased nearly 20,000 tons, and shipments increased 100 cars. The report shows 32,131 ovens in blast out of 38,558 in both upper and lower fields, as against 30,962 in blast the week preceding. Shipments were 13,212 cars as against 13,114 cars the week before. Total production was 416,354 tons as against 397,979 tons the week preceding. Connellsville producers are insisting that foundry coke will reach \$3 by January 1, and that furnace coke will soon show a minimum of \$2.25 or \$2.35.

CLOSE UP OHIO GAP.

Reports from Cincinnati state that John Kilgour, the new president of the Toledo, Bowling Green & Southern Traction Company, will at once begin to push the project for an extension of the road from Findlay to a connection with the Columbus, Urbana & Western Electric Railway, at Fishingers, thus gaining an entrance into Columbus and making a new through route to Toledo. There will be about 80 miles of new road to build and surveys of much of this have been made and the engineers are now working on the profiles. The greater part of the proposed route presents no engineering difficulties. Engineers representing the new road have been all over the route between Findlay and Columbus and the right-of-way is almost all secured. Two counties have given the company free right-of-way, and it is not believed that much difficulty will be found in financing the project, especially as one of the strongest financial groups in Cincinnati is now behind the company.

WORLD'S OCEAN TONNAGE.

The ocean tonnage of the world amounts to 41,449,767 tons as compared with 40,922,842 tons one year ago, according to Lloyd's Register for 1909-10, just published. Of these totals 36,473,192 tons and 35,723,095 tons represent gross tonnage of steam vessels for 1909 and 1908, respectively.

British Rail Market.

Of the British rail market, London Engineering says: "As to railway material, Sheffield manufacturers have not

only had to see a big consignment of rails, brought in almost to their own door from Canada, but now see their works idle, while a British colony has gone to Russia for 36,500 tons of rails. The home railway companies are evidently continuing their policy of economy. One or two local firms have fairly good contracts on hand for supplying tramway rails to British corporations. The Colonial market for tool steel seems to improve, especially the South African branch, and altogether the foreign outlook is about the only cheerful item to report. * * * The strike in Sweden is making it somewhat awkward for those who are dependent upon Swedish iron for crucible steel, etc., and should the strike be prolonged it will be a very serious matter for Sheffield."

STORY OF OLD INTERNATIONAL COMPACT.

Speaking of the recent break-up of the British Galvanized Iron Manufacturers' Association, the London Collieries Guardian says:

It is said this week that the basis of the late Galvanized Iron Trust rested almost entirely upon the compact with the American manufacturers—a statement, which, if correct, is very remarkable. It will be recalled how great a sensation was caused in iron trade circles in the closing weeks of 1907 by a report which was then made that the American steelmasters had "put a pistol to the head of British galvanizers" and demanded contracts from them amounting to at least 116,000 tons of raw steel bars as an alternative to an immediate American invasion of the British export markets for galvanized iron. It will also be remembered that when in September, 1907, galvanized sheet prices by a panic resolution of the trust were suddenly dropped from £13 17s. 6d. per ton for 24-wire gauge sheets f. o. b. to £13 2s. 6d., it was currently accepted that the drop was the outcome of an attack of the American makers upon certain of the valuable South American markets in which the British makers had previously been supreme. When in January, 1908, a further reduction of 12s. 6d. per ton took place and prices became £12 10s., the American scare was repeated. Raw steel bars, which had opened 1907 at £5 2s. 6d. per ton, were selling in the later part of that year at a minimum of £4 12s. 6d. to £4 15s. per ton delivered, so that taking this latter figure as a basis and applying it to the 116,000 tons believed to have been ordered from the Americans, the bribe which the latter secured from the British galvanizers not to destroy their export markets—or, at any rate, not to seriously compete with them—represented the very substantial sum of £535,000. The exact amount was probably larger, since it was rumored at the time that the Americans had secured above the then current market price from their English victims. The American compact had considerable influence in moderating foreign competition in galvanized iron. Which side—our own firms or the Americans—gained most from the bargain, only those who

worked under it can precisely say, but both sides obtained some advantage from it; both have made some profit at a time when otherwise selling prices might have been slaughtered by fierce international "cutting." The understanding with the United States producers has been an experiment in international regulation, which has had some measure of success, and may possibly be the forerunner of larger developments in the future. Very varied estimates prevail in the buying market as to what present prices stand at. The leading houses are for the most part fairly well off for orders, and they quote £11 to £11.55 for 24-wire gauge sheets. Business, however, is accepted well under these figures by other makers who quote £10 10s. to £10 15s. Black sheets are a drug on the basis of £7 2s. 6d. to £7 5s. Much surprise was occasioned in the export markets when the news of the suspension of the Makers' Association and the sudden drop in prices of 40s. to 50s. per ton was called out. Firms with heavy stocks must have suffered severely.

THAWING DYNAMITE WITH ELECTRICITY.

Approach of the season of freezing temperatures gives pertinancy to an abstract from the "Engineering Record" of a description of a method of thawing frozen dynamite with electricity, as practiced in the boring of the Roosevelt drainage tunnel, at Cripple Creek, Colo.

Support for the wiring of this heater consists of two 12-inch by 24-inch rectangular frames made of one-and-a-half-inch by quarter-inch iron, held apart three inches vertically and supported on legs above the floor. Telephone insulators spaced on one-and-one-half-inch centers are placed around the sides of each frame, and between each corresponding pair of insulators ordinary coils of galvanized telephone wire are strung, all the sets of wires being connected in series. The coils are heated by the electric-lighting current, and in about 30 minutes warm the small powder house, four feet by five feet in ground plan and six feet high, to a temperature of 80 degrees, Fahrenheit. The cost of this method of heating is about 10 cents per 24 hours, and is said to be far more economical than if coal were used for fuel.

Consul Birch calls attention to the recent arrival of a 5,000-ton steamer at Alexandria, Egypt, from Philadelphia, loaded with American coal and corn, and says: "The feature of this venture—the direct freight service, and the introduction into Alexandria of American coal—are each in the nature of an experiment, and upon the results achieved will probably depend future business. It is recognized in Alexandria by commercial men familiar with the trade situation, that the first step toward the increased sale in Egypt of both raw and manufactured American products is a regular and frequent service of freight steamers direct."

Range of Weekly Quotations of Pig Iron

PIG IRON

	Sept. 4.	Aug. 21.	Aug. 21.	Aug. 14.	Aug. 7.	July 31.	July 24.
At Pittsburgh—							
Bessemer	17.65@17.90	17.40@17.65	16.90@17.40	16.90	16.90	16.40@16.90	16.40@16.90
Basic	16.40@16.90	16.40@16.90	16.15@16.40	16.15@16.40	16.15@16.40	15.90@16.15	15.90@16.15
No. 1 Foundry	16.90@17.40	16.90@17.40	16.90@17.15	16.90@17.15	16.90@17.15	16.40@16.65	16.40@16.65
No. 2 Foundry	16.40@16.90	16.40@17.15	16.15@16.65	16.15@16.65	16.40@16.65	15.90@16.15	15.90@16.15
Malleable Bessemer	16.65@16.90	16.65@16.90	16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15
Gray Forge	15.05@15.90	15.65@15.90	15.15@15.65	15.15@15.65	15.40@16.15	14.90	14.90
Low Phosphorus	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90
Ferro Silicon, 50 per cent	64.00@66.00	64.00@66.00	64.00@66.00	63.50@65.00	67.00@68.00	67.00@68.00	62.00@63.00
Ferro Silicon, 10 per cent	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	23.50@24.50	23.50@24.50	24.00
Silicon Spiegel, 10 to 12 per cent ..	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	32.00@33.00	32.00@33.00	32.00@33.00
Spiegeleisen	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00
Ferro Manganese	43.95@44.95	43.95@44.95	43.45@44.45	42.95@43.95	43.45@43.95	43.45@43.95	43.45@43.95
At Virginia Furnaces—							
Basic	15.50@16.50	14.50@15.50	14.25@14.75	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00
No. 1 X	16.50@17.00	15.00@15.50	15.00@15.50	14.50@15.00	14.50@15.00	14.50@15.00	14.00@14.50
No. 2 X	15.50@16.00	15.00	14.50@15.00	14.00@14.50	14.00@14.50	14.00@14.50	14.00
No. 2 Plain	15.00	14.00@14.50	13.75@14.50	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75
Gray Forge	14.50@15.00	14.00@14.75	13.00@13.50	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00
At Birmingham—							
No. 1, Foundry	14.00	14.00	13.50@14.00	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00
No. 2, Soft	13.50@14.00	13.50@14.00	13.50	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00
No. 2, Foundry	13.50@14.00	13.50@14.00	13.50	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00
No. 3, Foundry	12.50@13.50	12.50@13.50	12.00@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.50@12.00
No. 4, Foundry	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50
Gray Forge	12.00@13.50	12.00@13.50	11.25@11.75	11.25@11.75	10.75@11.00	10.75@11.00	10.75@11.00
At Philadelphia—							
No. 2X Foundry	17.50@18.00	17.00@17.50	17.00@17.50	17.00@17.50	16.50@17.00	16.50@17.00	16.00@16.50
Basic	18.00	17.00@17.50	17.00@17.50	17.00@17.50	15.50@15.75	15.50@15.75	15.50@15.75
Gray Forge	16.50@16.75	16.00@16.50	16.00@16.50	16.00@16.50	15.25	15.25	15.25

STEEL.

Tons of 2,240 lbs., at Pittsburgh—

Bessemer Billets	25.00@25.50	24.00	24.00	24.00	24.00	24.00	23.00@24.00
Open Hearth Billets	26.00@27.00	26.00	26.00	26.00	26.00	26.00	25.00@26.00
Forging Billets	29.00	28.00	28.00	28.00	28.00	28.00	28.00
Sheet and Tin Bars	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.00@26.00
Bessemer Steel Rails	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Open-Hearth Steel Rails	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Light Steel Rails—							
25 to 45 lbs.	28.00	28.00	28.00	28.00	28.00	27.00	27.00
16 and 20 lbs.	29.00	29.00	29.00	29.00	28.00	27.00@28.00	27.00@28.00
12 and 14 lbs.	30.00	30.00	30.00	30.00	30.00	29.00	29.00
8 lbs.	31.00	31.00	31.00	31.00	30.00	29.00@30.00	29.00@30.00
Bessemer Wire Rods	31.00	31.00	31.00	31.00	31.00	31.00	29.00@30.00
Open-Hearth Wire Rods	31.00	31.00	31.00	31.00	31.00	31.00	29.00@30.00
Muck Bar, all pig iron	27.00	27.00	27.00	27.00	27.00	27.00	27.00

FINISHED PRODUCTS.

Tons of 2,000 lbs., at Pittsburgh—

Skelp Steel Grooved	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00
Skelp Steel Sheared	28.00@29	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00
Railroad Spikes	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00
Sheets, No. 28	44.00	44.00	44.00	44.00	44.00	44.00	44.00
Galvanized Sheets, No. 28	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Beams, 3 to 15 inches	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00
Beams, over 15 inches	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00
Channels, 3 to 15 inches	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00
Channels, over 15 inches	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00
Tees, 3-inch and larger	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00
Zees, 3-inch and larger	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00
Angles, 3 to 6 inches	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00
Angles, over 6 inches	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00
Tank Plate	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	27.00@28.00	27.00@28.00
Boiler Plate	30.00	30.00	30.00	30.00	30.00	29.00@30.00	29.00@30.00
Hoops	30.00	30.00	30.00	30.00	30.00	29.00@30.00	29.00@30.00
Bands	24.00	24.00	24.00	24.00	24.00	23.00@24.00	23.00@24.00
Bessemer Steel Bars	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00
Open-Hearth Steel Bars	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00
Common Iron Bars	30.00	30.00	30.00	29.00	29.00	29.00	29.00

and Various Finished Iron and Steel Products.

July 17.	July 12	July 5.	June 27	June 21.	June 14.	June 7	May 29.	May 22.	1908 Sept. 5.
16.40	16.15@16.40	16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.90@16.15
15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.15@15.40	15.15@15.40	14.90@15.15	15.40@15.65
16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.15@16.40	15.90@15.16	15.90@16.15	15.90@16.15	15.65@15.90	16.15@16.40
15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.40@15.65	15.40@15.65	15.15@15.40	15.65@15.90
15.90@16.15	15.90@16.15	16.15@16.40	15.90@16.15	15.65@15.90	15.50@15.65	15.40@15.65	15.40@15.65	15.15@15.40	15.40@15.65
14.90	14.65@14.90	14.90@15.15	14.90@15.15	14.90@15.15	14.50@14.65	14.50@14.65	14.50@14.65	14.40@14.65	14.65@14.90
20.00@20.90	20.00@20.90	20.00@20.90	15.90@20.00	19.50@20.00	19.00@19.50	19.00@19.50	19.00@19.50	19.00@19.50	21.25@21.75
62.00@63.00	63.00@64.00	63.00@64.00	61.00@62.00	62.00@64.00	61.00@62.00	61.00@62.00	63.00@70.00	62.00@65.00	69.00@70.00
24.00	24.00	24.00	24.00	24.00	24.00	24.00	25.00	25.00	26.50@27.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	33.50@34.00
29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	31.00@31.50
43.45@43.95	42.95@43.95	42.95@43.95	41.95@42.45	42.45@42.95	42.45@42.95	42.45@42.95	42.45@42.95	42.00@43.00	45.00@46.00
12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.50@12.75	12.50@12.75	12.50@12.75	13.75@14.25
14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.25	14.00@14.25	14.00@14.25	14.25@14.75
14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.50@13.75	13.50@13.75	13.50@13.75	13.75@14.25
13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.50	13.25@13.50	13.25@13.50	13.25@13.75
12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.50@12.75	12.00@12.25	12.00@12.25	12.00@12.25	12.25@12.75
12.50@13.00	12.50@13.00	12.00@12.50	12.00@12.50	11.75@12.00	11.75@12.00	11.75@12.00	11.50@12.00	11.50@12.00	13.00@13.50
12.50@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.50@11.75	11.50@11.75	11.50@11.75	11.25@11.50	11.25@11.50	13.00@13.50
12.50@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.25@11.50	11.25@11.50	11.25@11.50	11.00@11.50	11.00@11.50	12.50@13.00
11.50@12.00	11.50@12.00	11.00@11.50	11.00@11.50	10.75@11.00	10.75@11.00	10.75@11.00	10.50@11.00	10.50@11.00	12.00@12.50
11.00@11.50	11.00@11.50	10.50@11.00	10.50@11.00	10.25@10.50	10.25@10.50	10.25@10.50	10.00@10.50	10.00@10.50	11.50@12.00
10.75@11.00	10.75@11.00	10.50@10.75	10.50@10.75	10.25@10.50	10.25@10.50	10.25@10.50	10.00@10.50	10.00@10.50	10.75@11.25
16.00@16.50	16.50@16.75	16.50@16.75	16.75@17.00	16.75@17.00	16.75@17.00	16.75@17.00	16.75@17.00	16.00@16.25	16.50@17.00
15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.00@15.25	15.25@15.50
15.25@15.50	15.25@15.50	15.25@15.50	15.25@15.50	15.25@15.50	15.00@15.25	15.00@15.25	15.00@15.25	14.75@15.00	15.25@15.50

23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	25.00
24.00@25.00	24.00@25.00	23.50@24.00	23.50@24.00	23.00@24.00	23.00	23.00	23.00	23.00	25.00
26.00@28.00	25.00@27.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	27.00
25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	25.50	27.50
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.00
27.00	25.50@27.00	25.50@27.00	25.50@27.00	26.00@27.75	26.00@27.75	25.00@27.75	25.00@27.75	25.00@27.75	28.00@29.00
27.00@28.00	26.50@27.00	26.50@27.00	26.50@27.00	26.75@27.75	26.75@27.75	26.75@27.75	26.75@27.75	26.75@27.75	29.00@31.00
29.00	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	32.00@33.00
29.00@30.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	36.00@37.00
29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	33.00
29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	30.00	30.00	30.00	34.00
27.00	27.00	27.00	27.00	27.00	25.00	25.00	25.00	25.00	25.50

26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	29.00@30.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	30.00@32.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	33.00@34.00	34.00@36.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	45.00	50.00
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	71.00
27.00@28.00	26.00@27.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	32.00
29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
27.00@28.00	26.00@27.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	32.00
29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
28.00@29.00	27.00@28.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	33.00
28.00@29.00	27.00@28.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	32.00
27.00@28.00	26.00@27.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	32.00
29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	26.00	26.00	26.00	26.00	32.00
29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
29.00@30.00	29.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	36.00
23.00@24.00	23.00@24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	28.00
25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00	28.00
25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00	24.00	24.00	28.00
29.00	28.00@29.00	29.00	29.00	29.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	28.00

STEEL PLATES.

Base prices, tank quality, ¼-in. thick,
per 100 lbs., f. o. b., Pittsburgh:
6¼ to 100 inches wide\$1.30

Extras over base price—	
3-16 inch thick .....	.10
Gauges 7 and 8 .....	.15
Gauge 9 .....	.25
Gauges 10 and 11 .....	.25
Circles .....	.20
Sketches .....	.10
Boiler and Flange quality .....	.10
Marine Steel .....	.40
Widths over 100, to 110 in .....	.05
Widths over 110, to 115 in .....	.10
Widths over 115, to 120 in .....	.15
Widths over 120, to 125 in .....	.25
Widths over 125, to 130 in .....	.50
Widths over 130 in	1.00

IRON AND STEEL SCRAP.

Old steel rails, re-rolling..	\$17.50
Old steel rails, remelting..	16.50
Steel axles	20.00
Heavy melting scrap	16.50
Low phosphorus	20.00
Sheet scrap	15.00
No. 1 wrought scrap	17.00
Machine shop turnings ..	12.00
Cast borings	10.00
No. 1 cast	15.25
Old car wheels	16.25
Old iron rails	18.50
Axle turnings	13.50
Railway malleable	15.50

TIN AND TERNE PLATES.

Official prices, f. o. b., Pittsburgh—
Coke tins:

14x20, I. C.	\$3.55
14x20, 100 lbs.	3.40
14x20, 95 lbs.	3.35
14x20, 90 lbs.	3.30

Charcoal tins:

A Grade, 14x20, I. C.	4.15
A Grade, 14x20, 100 lbs.	4.00

Ternes:

20x28, I. C.	6.80
20x28, 200 lbs.	6.50

STEEL RAILS.

Fifty pounds and Heavier—

500-ton lots and over	\$28.00
Car load lots	30.00
Less than car load lots	32.00

Light Rails—

12 and 14 pounds	\$30.00
16, 20 and 25 pounds	28.00
30 and 35 pounds	28.00
40 and 45 pounds	28.00

Relaying Rails

Subject to inspection, f. o. b. Pitts-
burgh:

Stand'd 50 lbs. & heavier..	\$22.00
25 to 40 lbs.	23.00
16 to 20-pound rails	24.00
12-pound rails	25.00

STEEL SHEETS.

Official prices, per 100 lbs., f. o. b.,
Pittsburgh—
Gauge.

	Black.	Galv.
30	\$2.35	\$3.60
29	2.25	2.35
28	2.20	3.25
27	2.15	3.05
25-26	2.10	2.85
22-24	2.05	2.65
17-21	2.00	2.50
15-16	1.95	2.40
13-14	1.90	2.30

Blue Annealed.

10 and heavier	\$1.65
11-12	1.70
13-14	1.75
15-16	1.85

Corrugated Roofing.

Per square, 28 gauge, f. o. b. Pitts- burgh—	
Painted	\$1.55
Galvanized	2.80

WIRE AND NAILS.

Prices to jobbers in car load lots, per
100 lbs.; retailers 5 cents additional:

Wire nails	\$1.80
Plain wire	1.60
Painted barb wire	1.80
Galvanized wire	2.10

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per
cent pure are held at 24c per pound in
ton lots.

For small lots of 100 pounds and over
advances of 3c per pound are charged.

Rods and wire.....base price 32 cents
Sheetsbase price 34 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

	Per Ton.
Mine-run	\$1.10@1.20
¾-inch lump	1.20@1.30
1¼-inch lump	1.30@1.40
3-inch lump	1.55@1.65
1¼-inch nut	1.10@1.20
¾-inch slack .....	.55@.65

At Buffalo—

	Pgh.	Frep't
Mine-run	\$2.35	2.05
¾-inch lump	2.45	2.15
1¼-inch lump	2.55	2.25
¾-inch slack	1.85	1.70

At Cleveland—

	Pgh.	No. 8
Mine-run	\$2.10	\$1.80
¾-inch lump	2.20	1.90
1¼-inch lump	2.25	2.00
1¼-inch nut	2.10	1.80
¾-inch slack	1.55	1.45

At Detroit—

Mine-run	\$2.50	\$2.05
¾-inch lump	2.60	2.15
1¼-inch lump	2.70	2.25
1¼-inch nut	2.50	2.05
¾-inch slack	2.00	1.65

At Chicago—

Mine-run	\$3.00	\$2.55
¾-inch lump	3.10	2.65
1¼-inch lump	3.20	2.75
1¼-inch nut	3.00	2.55
¾-inch slack	2.45	2.25

MERCHANT PIPE.

Base discounts, car load lots, subject
to one point and 5 per cent extra to
large jobbers.

	Steel	
	Black.	Galv
¾ and 1-inch .....	.72	.56
¾-inch .....	.73	.59
½-inch .....	.76	.64
¾ to 6-inch .....	.80	.70
7 to 12-inch .....	.75	.60
Extra strong plain ends—		
¾ to ¾-inch .....	.65	.53
½ to 4-inch .....	.72	.60
4½ to 8-inch .....	.68	.56
Double extra strong—		
½ to 8-inch .....	.61	.50

WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe
car load prices to consumers; prices to
jobbers one point and 5 per cent.

¼-inch .....	.69	..
½ and ¾-inch .....	.70	.56
½-inch .....	.73	.61
¾ to 6-inch .....	.77	.67
7 to 12-inch .....	.72	.57

Extra Strong and Plain Ends—

¾, ¼ and ¾-inch .....	.62	.50
½ to 4-inch inclusive .....	.69	.57
4½ to 8-inch, inclusive65	.53

Double Extra Heavy plain Ends—

½ to 8-inch, inclusive58	.47
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BOILER TUBES.

	Steel	Iron.
1 to 1½ inches50	.45
1¾ to 2¼ inches62	.45
2½ inches64	.50
3¾ to 5 inches .....	.70	.57
6 to 13 inches .....	.62	.45

Less than car load lots, two points less.
2½ inches and smaller, over 18 feet, 10
per cent, net extra.

2¾ inches and larger, over 22 feet, 10
per cent net extra.

MERCHANT STEEL.

Cold rolled and ground shafting, 60
per cent off, car load lots; 56 per cent
off less than car load lots; delivered in
base territory:

Planished Tire Steel	\$1.40@1.50
Iron finish, up to 1½x½ in. ..	1.35@1.45
Iron finish, 1½x½ in. and over	1.20@1.30
Toe Calk Steel	1.70@1.80
Railway Spring Steel	1.75@1.85
Cutter Shoe	1.95@2.05
Flat Sleigh Shoe	1.55@1.65
Crucible Tool Steel	7.00@8.00
Open-Hearth Spring Steel ..	2.05@2.30

Freight Rates On Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig Iron, from Virginia furnaces to Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	\$2.35	\$3.60	\$3.20	\$2.35	\$3.30	\$3.35
Bristol		3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.35	3.60	3.20	3.00	3.95	4.00
Kayula, Ivanhoe, Rural Retreat ...	2.35	3.60	3.20	3.40	4.35	4.40
Pulaski, E. Radford, Max Meadows. 2.90	2.35	3.60	3.20	3.25	4.20	4.25

Pig Iron from Birmingham, Ala., tons of 2,240 lbs. to—

Boston, by water	\$4.60
Chicago	4.35
Cincinnati and Ohio River	3.25
Cleveland	4.35
Milwaukee and Northwest	4.75
New York, all rail	5.95
New York, rail and water	4.25
Philadelphia, all rail	5.00
Philadelphia, rail and water	4.00
Pittsburgh	4.90
St. Louis	3.75
To Pittsburgh from—	
Dunbar Furnaces .....	.85
Kittanning Furnaces .....	.60
Scottdale Furnaces .....	.85
Valley Furnaces .....	.90
Wheeling .....	.90
Valley Furnaces to—	
Cleveland .....	.90

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	Billets.
Baltimore	\$2.15	\$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville .....	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va. ....	.90	1.00
Youngstown .....	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango Valleys ..	1.00	
Wheeling	1.00	

COKE.

From Connellsville region, per 2,000 pounds to—	
Boston	\$3.50
Buffalo	1.00
Baltimore	2.25

FINISHED PRODUCTS.

Finished Steel Products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire, nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—

Albany .....	.16
Buffalo .....	.11
Boston .....	.18
Baltimore .....	.14½
Canandaigua .....	.13½
Cleveland .....	.10
Columbus .....	.12
Cincinnati .....	.15
Chicago .....	.18
Harrisburg .....	.14½
Louisville .....	.18
New York .....	.16
Norfolk .....	.20
Philadelphia .....	.15
Rochester .....	.11½
Richmond .....	.20
Scranton .....	.15
St. Louis .....	.23
Washington .....	.14½

To Pittsburgh from—

Mahoning and Shenango Valleys..	.05
Wheeling .....	.05

COAL.

Coal Rates from Mines—

To Ashtabula	\$1.00
To Allegheny, Pan'dle Ft. W. trk..	.43
To Allegheny, West Penn tracks..	.48
To Allegheny, B. & O. ....	.35
To Pittsburgh, P. R. R. Main Line..	.43
To Pittsburgh, B. & A. V. Div..	.48
To Pittsburgh, B. & O. ....	.33
To Valleys .....	.70
To Buffalo	1.25
To Cleveland	1.00
To Detroit	1.40
To Chicago	1.90
To New York, gross ton	2.25
To Philadelphia, gross ton	2.00

From Freeport—

To Buffalo	1.10
For Lake Shipments— Cargo. Fuel.	
To Ashtabula .....	.88 .98
To Cleveland .....	.88 .98
To Erie .....	.88 .98

West Virginia rates from mines—

To Chicago	1.90
To seaboard points, gross ton	1.80

From No. 8, of Ohio—

To Cleveland .....	.90
To Chicago	1.65
To Detroit	1.35

TIN PLATE.

Per 100 lbs., Pittsburgh to—

	C.L.	L.C.L.
Boston, Mass	18	21
Albany, N. Y.	16	19
Baltimore, Md.	14½	17½
Birmingham, Ala.	41	68
Cleveland, O.	10	13
Columbus, O.	12	15
Cincinnati, O.	15	18
Concord, N. H.	18	21
Charlotte, N. C.	39	61
Charleston, S. C.	33	70
Charleston, rail and water..	23½	31
Covington, Ky.	15	18
Chattanooga, Tenn.	33	65
Chicago, Ill.	18	21
Canadaigua, N. Y.	13½	16
Des Moines, Ia.	37½	48½
Detroit, Mich.	15	18
Denver, Mich.	84	118
Dover, Del.	17	20
Buffalo, N. Y.	11	13
East St. Louis	22½	26
Hartford, Conn.	18	21
Indianapolis, Ind.	17	19½
Louisville, Ky.	18	21
Montpelier, Vt.	21	24
Minneapolis, Minn.	32	42
New York	16	19
Norfolk, Va.	20	24
Natchez, Miss.	32	61
Portland, Me.	18	21
Providence, R. I.	18	21
Philadelphia, Pa.	15	18
Richmond, Va.	20	24
Rochester, N. Y.	11½	13½
Syracuse, N. Y.	13½	16
St. Louis, Mo.	22½	26
Terre Haute, Ind.	18	21
Topeka, Kas.	54½	68
Trappan, N. J.	16	19

Railroad Affairs Displayed for Manufacturers and Shippers

SHORTAGE OF EQUIPMENT IS CERTAIN.

The feature of the railroad equipment orders given during the closing days of August was in the locomotive department. Railway managers are beginning to realize that there is likely to be a shortage before the close of the year in motive power as well as cars, and are placing urgency orders for locomotives. The Illinois Central has just ordered 10 from the Baldwin Locomotive Works, the Grand Trunk 25 from the Canadian Locomotive Works, 15 from the Canada Foundry Company, and 10 from its own shops; the St. Louis and San Francisco 15 from the Baldwin Locomotive Works, and the Rock Island 50 from the American Locomotive Company. This brings the total for all roads for the first seven months of the year up to 1,134, which is a decided increase over the same period in 1908, when only 386 engines were ordered. However, the number falls about 60 per cent. below 1907, when the total was 2,685.

The number of freight cars placed in the seven months represented an aggregate of 54,000 cars, the orders since June totalling 44,000. This compared with 1908's total of 8,000 cars, looks very favorable, but when contrasted with the total of 105,000 cars for 1907 the loss in two years is more apparent.

A equipment official is quoted as saying that during the last two years the railroads have not purchased nearly enough equipment to fill out their lost number of cars. Since the report of the car efficiency bureau on August 4 the number of idle cars in the United States and Canada has further decreased 47,749 or about 23 per cent., and the whole number of cars out of service on August 18 was 159,424, or 93,579 less than at that time last year; of this, however, it is declared .50 per cent. are not now available for use.

On account of the wooden equipment destroyed during the past two years it is estimated that the Pennsylvania, after receiving the new cars ordered this year, will not have any more cars than it had in 1907. For this reason it is said the company will be forced to almost double its equipment orders for 1909 delivery. According to reports made to general headquarters there are fully 5,000 freight cars in the yards and shops awaiting repairs.

Prices for equipment have arisen steadily in conjunction with the rise in the price of materials and will continue to

do so. They are now between 15 and 20 per cent. above the prices of a few months ago. It is interesting to note in this connection that the New York Central was the only road to take advantage of the low prices and buy in large amounts of equipment, and they got in at the bottom of the market.

The New York New Haven & Hartford has ordered all freight car shops put at once on full time of six days a week and nine hours per day. A majority of shops have been running eight hours per day, four days a week for the past year.

W. & L. E. TO EXTEND.

General James C. Frazer, of Morgantown, W. Va., following a conference in Pittsburgh with Colonel J. M. Schoonmaker, vice president of the Pittsburgh & Lake Erie, and John T. Blair, president of the Little Kanawha Railroad, is quoted as saying that the Pittsburgh & Lake Erie is to be extended to Morgantown and other points in West Virginia. "Nothing will be done this year on the extension of the Pittsburgh & Lake Erie Railroad, but I expect to see the construction of the missing link between the State line and Morgantown next summer," said General Frazer. "Of course the orders for the extension will come from the New York office, and so far nothing definite has been received from that source.

"While business conditions are improving steadily, it is too late in the year for the Pittsburgh & Lake Erie to take up the extension of the line to Morgantown. From the talk I had with Colonel Schoonmaker and Mr. Blair, I judge that everything will be in readiness for actual work next year. Colonel Schoonmaker is just as enthusiastic as ever over the prospects of the new road."

NO I. C. EXTENSIONS.

J. T. Harahan, president of the Illinois Central, is authority for the statement that that road is not contemplating the extension of its mileage during the coming year. "The Illinois Central," he said, "does not contemplate constructing any new branches or adding to its trackage during the coming year. We have a well-developed system at present, better than ever before. In moving the crops this fall we will be able to eliminate that congestion which troubles railroads at that season and has troubled us in the past."

GREAT WESTERN PLANS.

Following the taking of the Great Western out of the hands of the receiver by its sale to the J. P. Morgan syndicate during the year just ended, there is evidence that this road is to be made a more important factor in the railway world. The car shops of the company at South Park, a suburb of St. Paul, have been opened and a large number of men have been set to work repairing the cars and locomotives of the company in order to get ready to participate in the large tonnage which is in sight. It is understood that President S. M. Felton has secured authority from the Morgan interests to bring the equipment of the road up to standard, which will require the ordering of a large number of cars and locomotives.

RUSH BUFFALO YARDS.

Following a recent conference at Buffalo of officials of the New York Central Lines, here, announcement is made that the Gardenville yards will be rushed to completion. The great gravity yards are about half finished and work has been almost at a standstill during the last year. Some construction has been done, but it has been arranged now to hasten the completion of the yards and when it is ascertained when the work will be completed a day will be set aside for the official opening of the yards.

The yards are about half complete. In all there will be about 350 miles of track. The yards are being used now. The work will entail an expenditure of \$300,000 to \$500,000.

HARRIMAN EXTENSIONS

Julius Kruttschmitt, director of maintenance of way and operation of the Harriman lines is quoted in press reports from Omaha as saying:

"The Harriman railroads are doing a bigger business than they were doing before the panic, or, in fact, than they have ever done before. But because of our improvements we are handling the immense business without an effort, and there are no complaints.

Mr. Kruttschmitt pointed out that more than 1,600 miles of road are in course of construction, 500 miles of which are scattered throughout every State west of the Missouri traversed by the Harriman lines. He said the Harriman roads had orders now placed for 5,500 freight cars, 1,500 refrigerators, 102 locomotives and 400 steel passenger and baggage, mail and express cars.

Try a Want or For Sale ad in the Industrial World.

PENNSY CONSCTRUTION.

The contract for double-tracking and grade revision work on the Pennsylvania Lines West have been let as follows: Second track work on the Logansport division to C. A. Sims & Company, of Philadelphia; The France Company, Bloomville, O.; Jones Brothers, Columbus, O.; H. E. Clubertson & Company, Cleveland, O.; Essex Construction Company, Buffalo, N. Y.; the Sturm & Dillard Company, Columbus, O., and Oliver Brothers & Callaway, of Chicago. On the Indianapolis division contracts have been let for the grading and masonry for the second track roadbed to the Drake & Stratton Company, P. F. Brendlinger, both of Philadelphia, Pa., and the Lorimer & Gallagher Company, of Chicago. Work on the diversion of line on the Louisville division, to meet the new grade on the Indianapolis division, has also been let to the Lorimer & Gallagher Company.

A long siding has been built from Sharpsburg, Allegheny county, along the Allegheny River by the Pennsylvania and one of the largest fills along the river is to be made at that point. This is said to be the first work on the proposed \$2,000,000 yards at Sharpsburg, for which plans have been prepared. Local officials say that authority to build the yards this year has not been given, although they admit that plans have been completed.

The yards will embrace almost all the ground between the Spang-Chalfant mills and Aspinwall along the river. To complete them it will be necessary to tear down all buildings along the lower side of Main street. In all about 100 miles of tracks will be laid providing for a capacity of from 5,000 to 7,000 cars, in addition to repair tracks, ash tracks, engine standing tracks, and a lower and upper approach to the bridge across the Allegheny River, which was completed in 1903.

Aside from the tracks to be laid car and locomotive repair shops, a roundhouse and other improvements will be made. The improvements will include thousands of feet of concrete construction along the river front.

A large acreage, recently acquired at Trafford City, Pa., by the Pennsylvania, will, it is said, be devoted to terminal purposes. It is reported that the Trafford City yard will be made the eastern limit in the event of the electrification of the Pittsburgh terminal district.

The Pennsylvania also is planning extensive improvements in Brownsville and the erection of a double track bridge across the Monongahela River about 56 feet below the present structure. The company has been ordered by Government authorities to raise the bridge and

in turn is awaiting permission from the Government to erect a new and higher bridge providing for two tracks just below the present structure. These improvements will necessitate trackage changes at Brownsville.

LONG ISLAND RAILROAD.

The Long Island Railroad Company, (J. R. Savage, chief engineer, Jamaica), has made application to the Public Service Commission of the Second District for permission to issue \$16,500,000 bonds to be used for construction work and new equipment during the next three years. Among the larger items of work planned are the following: Main line, between Woodside and Jamaica, \$2,000,000; Jamaica terminal, \$1,000,000; north side double tracking and electrification, \$1,000,000; Bay Ridge elimination of grade crossings, \$1,000,000; new freight yards and passenger stations, sidings, and double track, grade crossings, etc., \$912,662; electrical equipment of tracks and sub-stations, \$800,000; Glendale cut-off, \$309,582; Montauk freight cut-off, \$287,400; completion of Atlantic avenue improvement, \$100,000.

FOUR TRACKS FOR LEHIGH.

As fast as its financial position and general condition will permit, the Lehigh Valley will be made a four track road. Between Easton and Slatington, Pa., approximately \$1,000,000 is to be expended for such work, contracts for the same having been recently awarded. In that region there is now about 25 miles of such trackage, and ultimately 60 miles of three tracks from Penn Haven will be increased to four tracks. Penn Haven is the junction to tidewater, a distance of 250 miles.

This is necessitated by the heavy freight tonnage from the anthracite regions. Although there are many sidings along the line, freight trains are compelled to afford easy movement for those of the passenger service. This compels them to lose much time due to waits on sidings and it cuts quite a figure in annual operating expenses.

Vice President McNichol, of the Canadian Pacific Railway, is quoted in press reports from Seattle as saying that his company had no intention of building a line to Puget Sound as long as the present tariff agreement with the Northern Pacific proved profitable. Mr. McNichol said it was the policy of his road to develop Canadian territory, and it was not their purpose to invade the United States. He said that while the Canadian Pacific entered Chicago over the Wisconsin Central, the latter would be an independent road.

TROLLEY EXTENSIONS.

Harmony Route's New Line.

Reports from Ohio say the identity of the parties who are to build the eastern interurban outlet from Columbiana, New Waterford, East Palestine and intermediate Ohio towns to Ellwood City, Pa., has been established. It is the Pittsburgh, Harmony & Butler Traction Company, which now has lines in operation from Harmony, Ellwood and Butler to Pittsburgh.

Men employed by this company are now getting the right of way. It is almost a direct line from Ellwood City to Columbiana, O., and the line will close a gap between the two places. This will give direct connection to Pittsburgh and the line will be a little shorter than the steam line between Salem, O., and Pittsburgh.

The announcement that the line is the Pittsburgh, Harmony & Butler Electric Railroad, was given out positively by General Manager Raupp, of the Youngstown & Southern. The new road will connect with the Y. & S. at Columbiana. When the new extension is built it will also make trolley connection between Pittsburgh and Youngstown a fact.

Extending Indiana Lines.

The capital stock of the Illinois Oil Belt Traction Company has been increased from \$100,000 to \$500,000, and a second assessment of 25 per cent made. Reports from Terre Haute say Manager Upson is in New York buying rails for 10 miles of the road, which is to start at Charleston, Ind., and have its southern terminal at Mt. Carmel. The roadbed is now ready for rails for a part of the distance.

Additional Trolley Capitalization.

Advices from Augusta, Me., say the Illinois Traction Company has informed the Secretary of State of an increase in its capital stock from \$13,000,000 to \$16,000,000 by adding to the number of shares already authorized 20,000 shares of common stock and 10,000 shares of preferred stock. The company was incorporated in Maine.

FOR MONO RAIL LINE.

The Elevated Mono-Railway Company has been incorporated in Delaware to build a line in accordance with the Mono-Railway System. It will also deal in engines, trucks and cars for the running of same. The incorporators are: George C. Schroeder, of Washington, D. C.; Charles G. Guyer and S. E. Baker, of Wilmington. The capital is \$1,000,000.

Corporations to Which Charters Have Been Granted Recently

PENNSYLVANIA.

Mechanicsburg Foundry & Machine Company, \$10,000. Treasurer: A. S. Jacobson, Mechanicsburg, Pa. Directors: A. G. Eberly, S. F. Hauck, J. S. Weaver, J. H. Swartz, R. H. Thomas, Jr., A. S. Jacobson, Jas. P. Shaw, all of Mechanicsburg, Pa.

Simplex Nut Lock Company, Scranton, Pa., \$5,000. Treasurer: David James, 1123 Washburn street, Scranton, Pa. Directors: Henry P. Davies, Jr., Taylor, Pa.; Howard P. Davies, David James, H. G. Dunham, George T. Dunham, James H. Dunham, Phillip J. Davies, John J. Davies, Conrad F. Shindel, all of Scranton, Pa.

Pittsburgh Steel Products Company, increased capital stock from \$60,000 to \$1,000,000.

Johnstown Electric Light Company, increased capital stock from \$1,200,000 to \$1,600,000.

Aston Electric Light, Heat & Power Company, \$5,000. Treasurer: H. E. Marlor, Philadelphia. Directors: Harry W. Rhodes, W. Roger Fronefield, Media, Pa.; H. E. Marlor, Philadelphia, Pa.

Marple Electric Company, Middletown Electric Light & Power Company, Nether Providence Electric Company. Same as above.

Armstrong County Railroad Company, \$140,000. President: D. G. Bamford, Midway, Pa. Directors: Valentine Neubert, Henry J. Lindeman, Frederick Lindeman, Kittanning, Pa.; D. G. Bamford, Midway, Pa.; E. T. Norton, John L. Gans, Connellsville, Pa.

Mendenhall Milling Company, \$15,000. Treasurer: Elbert V. Mendenhall, Altoona, Pa. Directors: Elbert V. Mendenhall, John W. Baisor, Altoona, Pa.; Willmer E. Taylor, Hollidaysburg, Pa., R. F. D. •

Juniata Electric Light, Heat & Power Company, \$5,000. Treasurer, Harry D. Hewit, Hollidaysburg, Pa. Directors: Harry D. Hewit, John T. Leet, Peter S. Duncan, all of Hollidaysburg, Pa.

Brookville & Mahoning Railroad Company, increased capital stock from \$10,000,000 to \$15,000,000.

Allegheny River Mining Company, increased capital stock from \$500,000 to \$5,000,000.

Eastern Pennsylvania Power Company, increased capital stock from \$5,000 to \$2,000,000.

Palo Alto Heat, Light & Power Company, increased capital stock from \$5,000 to \$1,000,000.

Blacklick & Yellow Creek Railroad Company, increased capital stock from \$100,000 to \$200,000.

Central Coal Company, Scranton, \$30,000. Treasurer: Morgan M. Williams, Taylor, Pa. Directors: Luther Price, James E. Simons, Scranton, Pa.; Morgan M. Williams, David A. Williams, Taylor, Pa.; William F. Courtright, Mill City, Pa.

Lawrence Iron & Steel Foundry Company, \$10,000. Treasurer: P. LeGoullon, Pittsburgh, Pa. Directors: Oliver Wylie, Wilkinsburg, Pa.; P. LeGoullon, William Yagle, Pittsburgh, Pa.

Carnegie Dock & Fuel Company, \$150,000. Treasurer: J. T. M. Stonerod, Pittsburgh, Pa. Directors: J. T. M. Stonerod, Pittsburgh, Pa.; R. P. Burgan, J. H. Sanford, Carnegie, Pa.

NEW YORK.

The New Jersey Brick Company, New York; manufacture brick and building material; capital, \$2,000. Incorporators: Frank H. Parcells, John G. Hogan, Harry C. Belmore, all of No. 54 Wall street, New York.

Inland Construction Company, New York; general contractors, build roads, bridges, subways, etc.; \$100,000. H. C. Mitchell, No. 60 Wall street; Harry T. Ramsey, No. 149 Broadway; W. N. Wolfe, No. 60 Wall street, all of New York.

Simplex Filing Device Company, Buffalo; manufacture filing devices and cabinets, etc.; \$125,000. Charles V. Smith, Toronto, Can.; Edmund Van Den Vouer, Frederick B. Hartzell, Buffalo, N. Y.

New York Self-Winding Electric Clock Company, New York; manufacture electric self-winding clocks, batteries, etc.; \$50,000. Stephen W. Livingston, Herbert A. St. George, C. Royal Frazier, all of No. 41 Park Row, New York.

Hazard, Mudge & Company, Buffalo; manufacture and deal in iron and steel and their products; \$75,000. Ernest C. Hazard, No. 49 Phelps avenue, Rochester, N. Y.; Edmund W. Mudge, No. 5814 Forbes street; Harcourt N. Trimble, No. 5604 Howe street, both of Pittsburgh, Pa.

Ivory Button Manufacturing Company, Seneca Falls, N. Y.; manufacture buttons, etc.; \$150,000. Henry Stowell, J. S. Gray, J. W. Gallagher, all of Seneca Falls, N. Y.

Vermilye & Power, New York; deal in machinery, hardware and railroad appliances, construct, equip railroads, mines, etc.; \$25,000. Frederic M. Vermilye, Frank Paul, both of No. 50 Church street; Theodore Jaeckel, No. 55 Broadway, all of New York.

WEST VIRGINIA.

Sterling Coal Company, Philippi, to operate in Barbour county; capital, \$2,500,000, with \$1,000 paid. F. M. Kirk, R. J. Lynch, E. M. Keefer, F. I. Hagan and C. C. Owen, all of Cleveland, O.

Northern Lakes Steamship Company, Duluth, Minn.; capital, \$960,000 with \$500 paid. W. C. Merrick, Gustav von den Steinen, W. B. Stewart, Julian W. Tyler and Richard Inglis, all of Cleveland.

The Ivanhoe Mines Company, Chicago, with works in Montana; \$200,000. Joseph D. Hubbard, Le Grand Smith, A. L. Pearce, M. A. McCollom and George Westervelt, all of Chicago.

The Lynwin Coal Company, Goodwin, Raleigh county, W. Va.; \$50,000. P. P. Griffin, of Lock Haven, Pa.; John F. Griffin and P. C. Lynch, of Blue Jay, W. Va.; C. P. Phillips, Jr., and A. V. Amos, of Beckley, W. Va.

National Limestone Company, Martinsburg, W. Va.; \$1,500,000. Charles A. Young, Edgar C. Troust, John T. Na-

denbousch, G. P. Grimsley and A. C. Nadenbousch, all of Martinsburg.

Stewart Oil & Gas Company, Pittsburgh, Pa.; \$10,000. H. S. Stewart, W. B. Neal, A. H. Neal, W. O'Harrow and R. G. Gamble, all of Pittsburgh.

Farmers' & Merchants' Milling Company, Parkersburg, W. Va.; authorized capital, \$25,000. S. G. Clark, James S. Wade, Bettie Byer and Jessie D. Clark, all of Parkersburg.

Star Milling Company, Dorcas, W. Va.; \$5,000. J. W. Dasher, of Peru, W. Va.; George E. Outs, of Dorcas; W. C. Harmon, Joel Judy, Pansy Smith and O. M. Smith, of Petersburg, W. Va.

Freeble Safety Steel Car Company, Brownsville, Pa., for manufacture of steel cars; \$200,000, of which \$450 has been subscribed. B. F. Freeble, C. W. Rush, Ray Rush, H. W. Tweed and C. C. Carter, all of Brownsville.

OHIO.

Diamond Coal & Clay Company, Wellsville; W. E. Smith, P. M. Smith, J. P. Smith, W. M. Wooster and Thomas G. Hammond; capital, \$10,000.

Burdett Manufacturing Company, Monroeville; musical instruments; Edward Martin, Joseph M. Stoughton, R. D. Wickham and C. P. Wickham; capital, \$10,000.

Economy Motor Car Company, East Cleveland; Willis E. White, Frank T. Corell, O. E. Smith, C. H. Clark and W. W. Clark; capital, \$10,000.

Ohio Motor Car Company, Carthage; Charles F. Pratt, James W. McCutcheon, Albert E. Schafer, Lewis L. Townley, Ida A. Pratt; capital, \$10,000.

Victor Manufacturing Company, Toledo; E. B. King, William H. Harris, F. A. Herrick, Mark Kuehn, Karl A. Flukinger; capital, \$10,000.

Van Dorn Electric & Manufacturing Company, Cleveland, increase of capital from \$50,000 to \$150,000.

ILLINOIS.

Saltzman Manufacturing Company, Chicago; \$30,000; manufacturing machinery. George A. Chritton, Joseph Saltzman and Harry A. Williams.

Railway Automatic Mail Device Company, Chicago; \$10,000; manufacturing railway appliances. J. H. Dunn, R. W. Waugh and Percival Steele.

Freeport Windmill & Gas Engine Company, Freeport; name changed to Zeigler-Schryer Manufacturing Company.

Tufting Machine Supply Company, Chicago; change of object.

Johnson Chair Company, Chicago; increased capital stock from \$1,000 to \$400,000.

DELAWARE.

American Fuel Company, Wilmington, Del.; \$600,000. Andrew Schmidt, James A. Longstreet and William Brown, all of Philadelphia, Pa.

The Banding Machine Company, Corporation Trust Company; \$2,000,000. F. H. Shive, M. L. Rogers and Harry W. Davis, all of Wilmington, Del.

United Water Powers Company, Wilmington, Del.; \$1,000,000. F. R. Hansell, George H. B. Martin and S. C. Seymour, all of Philadelphia, Pa.

Elevated Mono-Railway Company, Wilmington, Del.; \$1,000,000. George G. Schroeder, Washington, D. C.; Charles G. Guyer, and S. E. Becker, Wilmington, Del.

NEW CONSTRUCTION.

Delphos, O. — Architects McLaughlin & Hulsken, Central building, Lima, O., awarded to Carl F. Steinle, Fremont, the contract for constructing a three-story brick and reinforced concrete cigar factory for the Diesel-Wemmer Company, to cost \$25,000.

Lima, O. — The National Cornice Company is taking bids on the erection of a one-story brick factory from private plans.

Louisville, Ky. — The Westlake Construction Company, of St. Louis, Mo., has started excavations for a brick and concrete fireproof manufacturing plant, to be constructed for B. Avery & Sons.

McKeesport, Pa. — Excavations have been started for a brick, corrugated iron and steel tin plant addition, to be constructed for the McKeesport Tin Plate Company, from plans drawn by Architect Samuel Diescher, 2412 Farmers Bank building, Pittsburgh. Cost \$500,000. Contract for foundation work was let to O'Herron & Company, South First and McKean street, Pittsburgh.

Newell, Pa. — The Nicola Building Company, Farmers Bank building, Pittsburgh, received the contract for erecting a one-story concrete, steel and iron manufacturing plant, for the General Chemical Company.

Portsmouth, O. — Architects A. B. Alger & Sons, Turley Block are ready for bids on constructing a three-story brick manufacturing building for the Mitchell Manufacturing Company, to cost \$30,000.

Toledo, O. — DeVore & McGormley, 828 Ohio building, received the contract for constructing a two-story brick concrete and steel manufacturing plant on Dorr street, for the Federal Creosoting Company, 355 Dearborn street, Chicago.

Covington, Ky. — Architect Lyman R. Walker, Sixth and Madison avenues, awarded to C. W. House & Sons, 819 Madison avenue, the contract for erecting a one-story brick machine shop on Third and Madison avenues, for the Willard Machine & Tool Company.

New York. — The Engineering News Publishing Company has placed a contract with Frank B. Gilbreth, New York, for the construction of a brick and reinforced concrete building, to be used as a publishing house. The building will be strictly fireproof.

Schenectady, N. Y. — Oren Finch, 437 State street, has prepared plans for manufacturing plant which the Climax Specialty Company will build on Albany road, consisting of a foundry 40x146 feet, a machine shop 40x200 feet with L, and an office building 35x35 feet, brick and structural iron, with concrete floors.

Cincinnati, O. — Plaut-Butler Company, was incorporated at Columbus to manufacture ladies' shoes, with a capacity of \$100,000. Nathan Plaut, wholesale dealer in shoes, will be the president of the company, and T. J. Butler, now with the Bering Shoe Company, will be superintendent. J. A. DeHaan will be vice

president and Jacob Plaut secretary-treasurer. The organizers are now seeking a location in Cincinnati, and expect to begin operation with a capacity of about 2,000 or 2,500 pairs of shoes a day. The company will make ladies' shoes only.

Reading, Pa. — The Steiner & Talcott Silk Company is building a new plant at West Reading that will double the capacity of the present factory. The main building will be 45x170 feet in dimensions, and three stories high. The power house will be 33x40 feet, and one story. The office building will be 60x20 feet and one story. The structure will be ready for occupancy on January 1.

Milwaukee, Wis. — The Raymond Concrete Pile Company, of New York and Chicago, has been awarded the contract for the concrete pile foundations of a building to be erected on Seventh street, Milwaukee, for the George Seelman & Sons Company.

Anderson, Ind. — The Welch Electric Company incorporated with a capital of \$25,000 to establish and equip a factory for the manufacture of electrical machinery and appliances. Directors, Bert Welch, J. W. Jones and A. S. McCall.

Ft. Wayne, Ind. — Plans are under way for the erection of a four-story addition to the Ft. Wayne Electric Works, and also a five-story office building.

COAL PRODUCED IN VIRGINIA.

Notwithstanding important developments in the Black Mountain district of Lee county, Va., which resulted in increased production of coal in that county in 1908, the total production of coal in Virginia decreased from 4,710,895 short tons, valued at \$4,807,533, in 1907, to 4,259,042 short tons, valued at \$3,868,524, in 1908, a decrease of 9.59 per cent in quantity and of 19.54 per cent in value. Wise county, now the most important coal-producing county in Virginia, showed a decrease of 586,972 tons in 1908, while Tazewell county's production fell off 136,520 short tons. Practically all of the decrease in the 1908 production was in quantity of coal made into coke.

MULLINS ENLARGING.

The W. H. Mullins Company, sheet metal worker, Salem, O., is contemplating extensive additions to its plant and the installation of considerable additional machinery in its stamping and forming departments. The company recently made a large shipment of copper windows and doors for a bank building in Honolulu and a shipment of fireproof windows for the Payton building in Spokane, Wash. It is now at work on a 16-foot statue of Liberty and four copper eagles, with 9-foot spread for a government building in Monterey, Mexico, and a galvanized cornice for a government building in Chihuahua, Mexico.

Try a Want or For Sale ad in the Industrial World.

REINFORCED CONCRETE TESTS.

The increasing use of reinforced concrete as a building material has led to numerous investigations of its strength when variously prepared and when subjected to various conditions. Perhaps the most elaborate series of tests is that now being carried on by the United States Geological Survey, which has recently published (Bulletin 344) a preliminary report on the subject. A full report, with a thorough analysis of the results, will be published after the 52-week tests are completed.

No attempt has been made in this preliminary report, however, to generalize the results of the tests, or to draw any conclusions, however warranted they may appear from an examination of the test data. It is hoped that the matter presented will provoke discussion, and in order to promote this end extended expressions of opinion or attempted applications of theory to results have been avoided. A running commentary on the results of the tests, however, emphasizing matters of particular interest and indicating a few points that might lead to interesting analyses, is included.

The bulletin, which is by Richard L. Humphrey, may be had free of charge on application to the Director, United States Geological Survey, Washington, D. C.

A DECLARATION OF INDEPENDENCE.

Ever since the opening of this year there has been great disturbance in the Central Pennsylvania and Clearfield districts over wage rates. The low prices for which coal has been sold by certain non-union mines compelled those who were operating under union auspices to ask for a modification of the scale, and they figured out that it would necessitate a reduction of 11 cents in order that they might meet competition. This was refused, and on appeal to the national officers of the organization it was again refused, even to be considered. The operators of the Clearfield section have held several meetings to discuss matters, and this is how one of the leaders puts it:

"We mean to give the miners of this district every opportunity to keep the union intact, and if they fail to appreciate what we are going to do we will take things in our own hands. We will not stand by and see our trade going to West Virginia and other fields where labor is cheaper. We are going to do business, strike or no strike. We are not going to permit ourselves to be driven out of business, even if we have to employ non-union men."

Sherarduct, a New Rust-Proof Rigid Conduit.

The attributes which are the characteristics of an ideal conduit are the smoothness of the interior through which the wires can be easily and quickly fished; sharp, clean cut, rust-proof threads at coupling, enabling the rapid and perfect connection of each length, and aiding in the proper grounding of the system; bending readily without cracking, peeling, flaking or scaling; unaffected by alkalis; impervious to atmospheric and chemical actions; and rust resisting power against cement, cinder concrete and other material used in building construction.

In "Sherarduct," the new rust-proof rigid conduit, is found all these necessary and essential features. There is used in its manufacture a high grade mild steel pipe thoroughly cleansed of all scales, silicates, oxide and other impurities, and then subjected to the process of Sherardizing.

Sherardizing is a process for forming at the surface of the metal an alloy with zinc and on top of this a layer of pure zinc, by heating the pipe in zinc dust in order to render it rust-proof and immune to corrosion. After the pipe is thoroughly cleaned, it is placed in a closed receptacle or drum charged with zinc dust. The drums are then closed air tight, rolled into the ovens and "tumbled," while the temperature is gradually brought to about 600 degrees, Fahrenheit and is gradually returned to normal when the tube is removed after cooling. It is then found that the zinc dust has been driven and uniformly distributed into the pores of the metal, and the pipe is alloyed with zinc dust on the inside and outside surfaces alike.

The zinc powder used is of peculiar character—about 90 per cent pure zinc, 10 per cent oxide which is not free, but covering the pure zinc particles.

From experiments it is shown that when the pipe is subjected to the Sherardizing process, none of the iron is lost by passing into the surrounding zinc dust, and the tensile strength is the same after as before the process.

One advantage in "Sherarduct" is that grease or water is an aid to the process rather than a detriment as is the case in other processes where defective spots, or corrosive elements may be bridged over by the "protective" coating, thus confining or covering the very element desirable to exclude. A pin point of rust so confined will continue to pit the pipe, and if not discovered for many months after the possible installation of the conduit behind marble walls, the damage is incalculable.

The value of Sherardizing is easily

estimated when "a Sherardized chain has remained in sea water for nine months without showing any signs of corrosion and Sherardized telephone wire has stood two and a half times the test required by the American Telephone & Telegraph Company, without breaking down."

This method does not cover up bad spots, acid spots nor corrosive agents, but acting directly opposite to other processes, detects or makes more prominent any defects which are then thrown out. The chemical action of the process in the driving into the iron of this pure zinc destroys the corrosive elements,

The zinc is so intimately rooted that it is impossible to separate it either chemically or mechanically without removing the original surface. This is the first attainment in the production of a rust-proof conduit and is obtained by the very nature of the surface itself.

"Sherarduct" conduit is a rust-proof tube without further treatment, but it is desired, however, to eliminate every possible opportunity for corrosion and a special final treatment is given the conduit which consists of dipping in an oil which resists the action of such acids as are found in cinder concrete which would dissolve the pure zinc coating.



Sherarduct Pipe.

which may be invisibly retained on or in the pipe when placed in the drums, thus producing a conduit which is free from hidden defects.

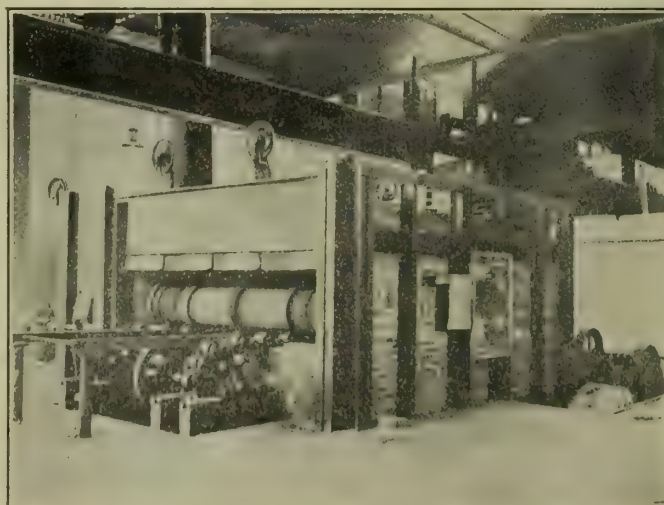
Sherardizing does not fill up the finest threads nor impair the finest netting, hence there is no necessity of rethreading. The threads of "Sherarduct," being alloyed with zinc, are preserved from corrosion which strengthen to a great degree the point of connection of the different lengths, which has always been considered the weakest point in conduit system.

It is well to remember that Sherardizing does not form a mere coating on "Sherarduct," but that an actual amalgamation of the zinc with the metal takes place and consequently produces an alloyed surface which is rust-proof.

Zinc, however, applied is of a porous character except in the alloy found under the outer coating of "Sherarduct" the pores of zinc are sealed and an outer coating given which effectively resists acid action.

Because of this zinc surface, "Sherarduct" can stand rough handling, mashing, bending and twisting without injuring its rust-proof qualities. The sharp tools of workmen, filing or abrasion do not remove the zinc and the iron is always non-corrosive. This is due to the protective action of the zinc-iron alloy formed on the boundary line between iron and zinc.

This in marked contrast to what is known as electro and hot galvanizing which results only in surface coating, which is often removed by rough usage,



Furnace Used in the Sherardizing Process.

resulting in the exposure of the surface of the metal to atmospheric actions.

Exhaustive tests of eminent engineers and chemists have developed the fact that this new process of Sherardizing metals is superior to all other methods and is a marked advance in the art of securing rust-proof surface on iron and steel products.

Sheraduct conduit, because of the gradual heating, to approximately 600 degrees, Fahrenheit, and the gradual cooling, is annealed. This produces an easy bending pipe which is more pliable and workable than any other tube. It means a considerable item in labor and permits of more bends in the pipe, therefore fewer elbows and naturally a lesser number of couples. Wherever bends can not be made, it is necessary to cut and thread the pipe which naturally lays every cut open to rust, and greatly increases labor on the job. It is safe to estimate a 10 per cent loss on the average job due to stiff pipe, excess elbows, cutting and rethreading. Sheraduct, not having a surface coating, will not flake nor crack at sharp bends. The alloy is permanent and neither sharp bends, hammering nor tools of workman will expose iron surfaces. This is unique in conduit, as never before has the protective coating shown much value against abrasion. And upon this point depends largely the possibilities of a rust-proof pipe installation.

Conduits are used as a protective raceway for electrical conductors and wire must be pulled only after complete conduit installation and it is the intent and purpose to provide for the renewal of conductors at future periods.

This is an important item of labor economy which the contractor should not overlook as many hours of labor are charged up on a contract job while the workmen are vainly endeavoring to pull wires and cables through conduit which do not fish properly.

The intention as stated above is that conduit shall stand as a permanent raceway for wires and the question of rust and corrosion leads to the point of whether new conduit will have to be put around the wires after short periods.

Corrosion of conduit upon the interior is but a step from corrosive exterior. Rust takes more space than iron and any one familiar with conduit work has recognized the raised enameled surfaces—"warts"—caused by rust growing, finally bursting through the enamel, laying the iron open to continued and increased rusting.

Corrosion is an all-important item in large structures and the point of cost of conduit is a small item compared with total cost of building and ultimate damage done if necessary to remove.

Many cases have been found where the conduit was well rusted before installed in the building, others where less than 25 per cent of the protective coating remained on the conduit by the time it was installed.

Sheraduct conduit has not only a sound protective coating, but under its pure zinc surfaces is a zinc alloy which under every standard test of time in weather, steam, earth, lake water, salt water, acid and acid fumes has proven absolutely proof against corrosion.

No other process discovered is equal to the Sherardizing process and to briefly review the reasons is hard because of the broad scientific nature of the subject "Corrosion and its prevention." The one definite settled fact which stands out in the limelight is that surface coatings are only of value to a certain limit below which the coating is worthless as a protection.

Corrosion may shoot from a pin point and in some instances openings in protective coatings found to measure 1-1000 of an inch have started corrosion which continued to eat its way underneath the protective coating and deposit or break through as the rust grew, but the more serious items are the bridging over of acids used in cleaning the pipe thus closing under the surface of salts which immediately produce deleterious action.

In Sheraduct conduit the ideal condition prevails in that as one expert described the result of his findings or tests, "An alloy is a solution of metals;

in the case of Sherardizing the zinc in a finely divided state is absorbed into the metallic mass with which it is in-tact. The articles might be said to be case-hardened."

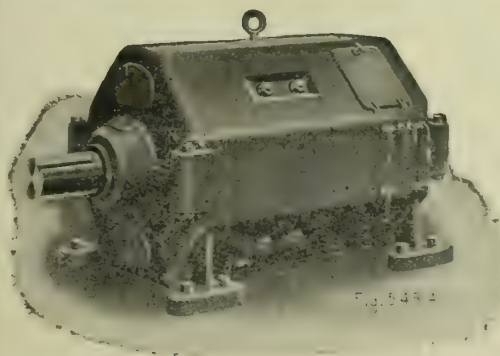
The three elements of corrosion—carbonic acid, hydrogen-peroxide and electrolysis—have forced themselves into every place in the earth and above, and our exhaustive test leads us to believe we have produced a conduit proof against these destructive agents.

"Sheraduct" is regularly inspected and labeled under the supervision of Underwriters' Laboratories, (Inc). It is manufactured by the National Metal Molding Company, of Pittsburgh, at the plant at Economy, Pa.

WHEELING PLANT IS NEARLY READY.

The Wheeling Metal & Manufacturing Company, now located at Twenty-eighth street, Wheeling, W. Va., is building a new plant at Glendale, near Wheeling. The main building is of steel and brick construction, 80x280 feet. The Architectural Iron & Wire Works, Wheeling, is erecting it, as well as placing the concrete foundations for the second building, 60x140 feet, to serve as a warehouse. The new plant will be ready for operation about October 1, when it will about triple the company's capacity for making stamped roofing, ceilings, etc.

The Steel industry is full of Crocker-Wheeler Form W Motors



Form W Motor, 7 1-2 to 200 H. P.

which are fully described in Bulletin 85-H.

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Drawings—Structural and mechanical designs and details. Moderate prices. Address Box 126 Industrial World.

Civil Engineer, 20 Years Experience, desires position as locating or resident engineer; also familiar with drainage work; A1 reference; have instruments. Address Box 43, Amboy, Ill.

Foundry Foremen and Others wanted to increase their earning capacity 25 to 50 per cent, by taking a course in the mixing of irons with the Milwaukee Correspondence Schools, Goldsmith Bldg., Milwaukee, Wis.

A Position as Manager or Superintendent; age 29; a graduate Massachusetts Institute of Technology; at present in charge of a boiler plant with an annual output of nearly 100,000,000 K. W. H.; reasons for desiring a change; 12 hours per day, 365 per year. Address Box 4, Darlington, Mo.

WANTED.

Situation—An experienced accountant, correspondent and general office man, accustomed to handling men and accounts, desires position where energy and attention to details will merit recognition. Address Postoffice Box 194, Northside, Pittsburgh.

Wanted—Attention, manufacturers. An old-established rolling mill, whose output is high grade bar iron, and black and galvanized sheets, and having ample ground in Pittsburgh district, would be interested in having located on their ground manufacturing adjuncts that use above materials. Parties engaged in manufacture of trade articles from above materials, who contemplate change of location, or engaging in new enterprises, can address office of the Industrial World, Pittsburgh, Pa., giving full particulars as to tonnage used; space desired, etc.

Wanted — A second-hand 15 or 16 h. p. stationary gas engine. Address Norwood Machine Company, Cincinnati, O.

Wanted — Manufacturers wanted to build cold rolled shafting machinery on royalty basis, under United States patent No. 895,364, dated August 4, 1908, described in the Industrial World December 28, 1908. Address John S. Griffin, Roslyn, Washington.

SEALED PROPOSALS.

Machines for Tabulating Agricultural Statistics. — The Director of the Census is considering various types of machines with a view to determining the one best adapted for tabulating the agricultural statistics of the Thirteenth Census. Any one possessing a machine adapted for this purpose is invited to present the

same for test in practical operation at the Bureau of the Census, Washington, D. C., on or before July 31, 1909. For further information address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

Sealed Proposals will be received at the office of the Director of the Census, Washington, D. C., until 2 o'clock p. m., August 9, 1909, and then publicly opened for furnishing all the labor, materials, and work necessary for the construction in lots of 60, 75, 100, or 125 tabulating machines and delivering the same complete, free of all charges for transportation, at the Census Building, Washington, D. C. right is reserved to accept or reject all bids in whole or part, to strike out any item or items in the specifications, and to waive any defects. For specifications, blueprint drawings, blank proposals, and full information, address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

FACTORIES WANTED.

Factories Wanted — Grafton, W. Va., will give to manufacturers, a free site on railroad siding, with shipping facilities in all directions, five-cent gas, and an inexhaustible supply of soft water and coal. For information, address Secretary, Grafton Board of Trade.

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Manufacturing Sites — Free, on railroad and Ohio river and street car line; cheap gas; cash bonus given to good mills, factories and shops. Special facilities for sheet and tin mills. Address Paden City Land Company, 45 South Twentieth street, Pittsburgh, Pa.

FOR SALE.

For Sale—Several power generators with their engines and switchboards, lighting generators, hoisting engines, mine wagons, air compressors, feed water heater, steel head frames and bins. All this apparatus brand new at manufacturers' shops. Owing to contracts for this equipment being placed 18 months ago, can sell same at lower prices than it can be purchased for today and can also give immediate delivery. Address Box 200, Industrial World, Pittsburgh, Pa.

GAS ENGINE AND GENERATOR FOR SALE.

Or Westinghouse 13"x14" 3-cylinder gas engine, with usual fittings and dynamo igniting spark coil, connected by patented flexible insulated coupling to one General Electric Company direct current generator, type M. P., 6 piles, 100 K. W., 270 R. P. M., 250 volts, 400 amperes, guaranteed to stand 50 per cent overload for two hours and 100 per cent momentarily.

All in first class condition. Used only as spare. We are replacing with 500

horsepower gas engine of our own make, and 400 K. W. generator. For price and photograph address Mesta Machine Company, Pittsburgh, Pa.

For Sale — One second-hand 8x9" Chuse engine, direct connected to 15 k. w. Triumph generator; good condition. Electric Machinery & Specialty Company, 204 Franklin avenue, St. Louis, Mo.

For Sale—Rock Drill—Ingersoll make; motor, 1 h. p., complete; shafting, pulleys, hangers, belting, lathes, 1 drill press, cheap; boilers, engines, pumps. William H. Flynn Machinery Company, 404 East Second street, Cincinnati, O.

For Sale—One-fifth interest in an up-to-date manufacturing plant, building a line of special and patented machinery, and having a very extensive jobbing trade. Purchaser can secure a salaried position as engineer, chief draftsman, or salesman. Price of one-fifth interest \$10,000. Address Box 154, care Industrial World, Pittsburgh, Pa.

Machinery Bought, Sold and Repaired—Engines and boilers, all styles and sizes, both new and second-hand; machinery of every description for all purposes; also pulverizer and crushers. Write to me for anything you want. Gruendler Machine Company, 928 Main street, St. Louis, Mo.

For Sale—One 18x24" slide valve engine 2 66"x18' tubular boilers, 1 heater, 1 deep-well pump and 5 wood working machines; will overhaul and put in first-class condition, cheap; also, several direct current motors, 3, 5, 10 and 15 h. p., 220 volts. The Farrin-Korn Lumber Company, Winton Place Station, Cincinnati, O.

For Sale — Rolling Mill—The property known as the Seyfert Rolling Mill, consisting of Puddle and Plate Mills for making sheared skelp is offered for sale. Located about four miles from Reading, Pa., on the Wilmington & Columbia Division of the Reading Railroad. For particulars apply to Samuel R. Seyfert & Brother, Reading, Pa.

For Sale—51 feet 16 double belting, 40c per pound.

One 20-h. p. 500-volt motor.
One 10-h. p. 500-volt motor.
One 3-h. p. 220-volt, back-geared motor.
One 6x6 air compressor.
One 4x6 air compressor.
One 100-h. p. Corliss engine. American Electric Company, 1106 Cass avenue, St. Louis, Mo.

IRON ORE LANDS.

For Sale—10,000 acres in tracts, fine ore lands in Virginia and Tennessee. Fine location for transportation. Abundant limestone, water, coking coal, nearby and on the properties. Low price. For particulars write, in care Box 210, Industrial World.

ELECTRIC PIG IRON EQUIPMENTS IN SWEDEN.

The London "Iron and Coal Trades Review" prints the following statement by director Yngstrom on experiments at the Domnarfvet Works, Sweden, with the production of pig iron by means of electricity:

"For some considerable time experiments have been made at the Domnarfvet Iron Works with the object of producing pig iron directly from iron ore in electric furnaces. These experiments have not yet been concluded, for which reason it has not been considered advisable to give a detailed report at the present moment. However, as the results, no doubt, would be of great importance to iron-masters and others, the author has obtained the permission of his copartners to give a short report of the results arrived at.

"In 1906 the A.-B. Electrometal and the Grangesberg and the Bergslaget Iron mines entered into an agreement for the purpose of making experiments in producing iron by means of an electric furnace invented and constructed by three engineers, Messrs. Gronwall, Lindblad and Staalhane. This furnace was originally built according to the induction principle, but has been modified from time to time. It is sufficient to add that the hearth of the furnace is cylindrical—i. e., the lower part of it, which is covered by an arch. The electric current, three-phase alternating, is conducted to the furnace through electrodes of carbon, passing to the cylinder shaped part of the furnace through the aforesaid arch, which is cooled by means of water. The pressure during the experiments has been about forty volts, with about 8,000 to 9,500 amperes, and the load 480 to 500 kw. In order to protect the arch of the furnace against the high temperatures, furnace gas, which is obtained from the upper part of the furnace, is brought down under the arch through three openings by which a cooling effect is obtained. This arrangement has proved to be of great service and practical advantage.

"The furnace is started and worked in the same way as an ordinary blast furnace. The charge used at present is of a weight of about 2 hundredweight of ore from the Grangesberg Iron Mines (containing about 60 per cent. of iron) 7 pounds of slaked lime and 40 pounds of coke. According to an estimate made, this is equal to a consumption of 5 hundredweight 3 quarters of coke per ton of pig iron. The coke which was utilized contains 81 per cent. of carbon, 7 per cent. of water and 11 per cent. of ash. In a previous case an experiment was made with a charge containing 2 hundredweight of ore, 39

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pounds of coke and 4 pounds of lime, which is equal to about 5 hundredweight 2 quarters of coke per ton of pig iron.

"With regard to the products obtained in the furnace, the content of carbon has in certain cases been reduced to a figure as low as that of steel. As a rule, however, pig iron only has been produced. Time and experience will prove which of these products may be of the greatest advantage.

"In the experiments which are now going on the content of carbon has generally averaged about 1.80 per cent. while it has previously been about 3.20 per cent. The content of silicon has been varying, as a rule, from .2 to .07 per cent., but it has also been higher, and in one particular case it was even as high as 4.40 percent. The content of sulphur in gray pig iron has been reduced to .005 per cent., and even below this figure, while the content of sulphur in the coke utilized was about .5 per cent.

"The supply of electric power is, however, of the greatest importance in the production of pig iron directly from ore by mean of electricity. As regards such power in its relation to the industry and its capacity in the manufacture, no definite result has been arrived at; the average in the most favorable cases has been something above two tons per electric horse-power year. But there is every indication in favor of the supposition that, provided the supply of power to the furnace were to be increased, its thermal effect would also improve to such an extent that three tons per electric horse-power year ought to be obtained. According to a theoretical estimate made, the production should exceed even this figure, which is not at all improbable in view of the fact that three tons per electric horse-power year have been obtained by experiments made elsewhere."

NEW PATENTS.

929,687—An improved clad metal and process of producing the same has been recently patented by John F. Monnot, of New York, N. Y., assignor to Duplex Metals Company, of New York. It is described by Siggers & Siggers, patent attorneys of Washington, D. C. The invention relates to clad metals and processes of producing same, and comprises compound metal articles comprising a base of ferrous metal carrying a welded-on layer of an unlike metal permanently and indissolubly united thereto, and also a process of producing such clad metals, all as more fully herein-after set forth and as claimed.

The invention comprises a process of producing clad metal objects comprising unlike metals weld-united, which

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comprises casting molten bodies of unlike metals into contact with opposite surfaces of a separator of material capable of weld-uniting with both the metals so cast, and progressively cleaning one or both said surfaces by the action thereon of a deeper layer of cleansing material progressively displaced by the molten metals so cast.

929,778—John F. Monnot, of New York, N. Y., assignor to Duplex Metals Company, of New York, has recently secured letters' patent for a compound metal body and process of producing same. The invention relates to compound metal bodies and processes of producing the same and consists in metal articles composed of layers of aluminum or other like metal of the light metal group, (such as magnesium, beryllium or glucinum, or alloys such as magnalium, which because of high content of one or more of the metals of such group, partake in general of the nature of such metals) united to unlike metals, and particularly to ferrous metals such as iron or steel (including the various compound steels), and also in a process of producing such compound metal bodies.

The process comprises a metal of the light-metal group and an unlike metal inseparably united, which consists in contacting a body of one such metal with a supermolten mass of a third metal and then contacting the coating so formed by such supermolten metal with a molten mass of the other metal and causing a layer thereof to solidify thereon.

930,969—A new metal bending machine has been recently patented by Theodore Kardong, of Minneapolis, the primary object of which is to provide simple mechanism of a powerful nature, whereby articles can be readily formed into various shapes. The machine comprises a forming member rotatable in opposite directions, of guide means for the article to be acted on, and a support for the guide means adjustable to different positions on different sides of the forming member.

Re-issue 13,004—Charles A. Juengst, of Croton Falls, New York, has recently invented a machine for sawing metal. The object is to reduce to a minimum the liability to injury by effecting a slow return.

The machine comprises a gravity moving saw frame and saw and the saw feed engaging, operating and releasing devices, or devices which upon release of the feeding and operating devices automatically come into engagement with and hold the gravity moving saw and saw frame and gradually return the same to an initial position. This patent has been assigned to Higley Machine



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Company, Croton Falls, New York, a corporation of New York.

931,332—William E. Nickerson, of Cambridge, Mass., has obtained letters-patent on new improvements in methods and apparatus of treating steel. The invention is particularly applicable to the tempering of blanks formed of thin sheet steel such as are produced by the ordinary rolling mill. The method of tempering consists in subjecting them to a series of progressively-increasing temperature-heating operations, and then cooling them slowly. The tempering apparatus consists of a tempering bath, and means for moving the articles to be tempered while completely submerged in said bath.

931,220—Letters patent on a metal shearing machine, have been obtained by George E. Roesch and Frank F. Wright, of Aurora, Ill. The chief objects of the improvements are:—to provide a sheet metal shearing apparatus that will cut the material with rapidity, with minimum power to operate and that will be accurate in its results.

The cutting apparatus comprises a suitable support having a guide-rail and a clamp, a carriage mounted on said guide-rail and consisting of an upper and a lower portion with an inclined face between said portions, cutters rotatably and adjustably mounted in the respective portions of said carriage, and means for moving said carriages along said guide rail.

Other patents granted August 17, 1909 reported expressly for the Industrial World by J. M. Nesbit, Patent Attorney Park building, Pittsburgh, Pa., are:

Rotary engine, Charles McQuown, Detroit, Mich.; well-drilling apparatus, Henry B. Walker, Mount Vernon, O.; assignor to Oil Well Supply Company, Pittsburgh; coke-loader, Charles H. Wright and Will K. Monroe, Cleveland, O., assignors to the Brown Hoisting Machinery Company, Cleveland; journal-box lid, Charles A. Lindstrom, Allegheny; grate, James W. Webb, Becks Run, Pa., underfeed fuel-stoker, Gustave Weiland, Stockton, Calif.; rolling mill tube trough, John S. Worth and William F. Harrison, Coatesville, Pa.; tube-trough for tube mills, John S. Worth, Coatesville, Pa.; conveyor for tube and bar mills, John S. Worth and William F. Harrison, Coatesville, Pa.; tube-drawing device, Walter T. Adams, Hayesboro, and Richard Higgins, Pittsburgh, method of firing furnaces.

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JAPANESE VISITORS COMING.

A group of leading Japanese financiers, and captains of industry, including mill owners, mine owners and heads of wholesale houses, arrived in Seattle from Yokohama on September 2 on the steamship Minnesota.

Among the visitors from Nippon is Baron Shifuzawa, known as "the J. P. Morgan of Japan." The delegation is by all odds the most distinguished in its representation of Japanese industries that ever visited the country. After a stay of a week at Seattle, the party will leave for a 90 days' tour of the country, and will visit all the great industrial centers, to study American trade methods. The visitors will be accompanied by officers of a number of commercial organizations, and 15 trade experts furnished by the government at Washington.

The personnel of the official party from Japan follow:

Tokoyo—Baron Eiichi Shibusawa, president Daiichi bank, and Baroness; Buyel Nakano, president chamber of commerce, president stock exchange, member of house of representatives; Heizayemon Hibiya, president Kanegafuchi Cotton Mill Company, vice president chamber of commerce; Sakutaro Satake, president Tokyo Electric Lighting Company, member of house of representatives; Kenzo Iwahara, director of Mitsui & Company; Kaichiro Nozu, trustee of chamber of commerce, member house of representatives; Zenjuro Horikoshi, exporter of silk goods, and Madame Horikoshi; Munizo Koike, broker, Tokyo stock exchange; Kinnosuke Machida, silk thread dealer, trustee chamber of commerce; Narazo Takatsuji, director Kanegafuchi Cotton Mill Company; Torakiro Wataso, president Tokyo Konoyen nursery; Suyeo Iwaya, member of Hakubunkan Publishing Company; Baron Naibu Kanda, professor peers school; Taizo Kumagao, physician; Takajiro Minami, professor of Tohoku university, Nogaku-Hakushi; Motosado Zumato, proprietor Japan Mail, and seven attendants.

Osaka—Michio Doi, president Osaka Electric Lighting Company, president chamber of commerce; Tokugoro Nakagashi, president Osaka Shoshen Kaisha, now in San Francisco; Bokushin Oi, president Sulphuric Acid Company, member of house of representatives; Toshio Matsumura, attorney, assistant mayor of Osaka; Tamenosuke Ishibashi, journalist, member of house of representatives; Yeinosuke Iwamoto, broker, Osaka stock exchange; Heibei Sakaguchi, silk weaver, and two attendants.

Kyoto — Jihei Nishimura, president chamber of commerce, textile merchant, member of house of representatives;

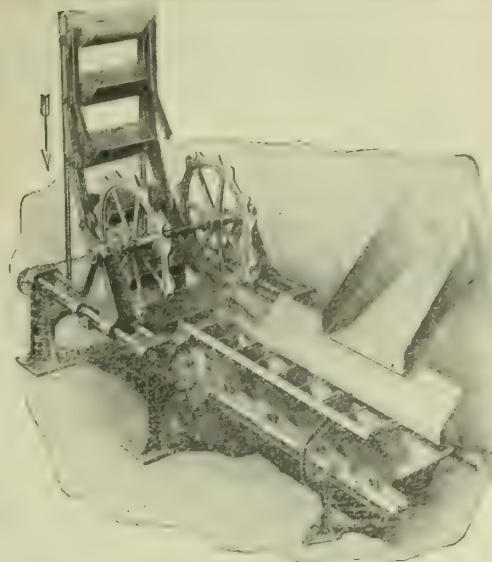
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Of Every Description,

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ORE CLEANSING MACHINERY OF EVERY DESCRIPTION.

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Seigi Nishiike, secretary chamber of commerce.

Yokohama—Kahel Otani, president chamber of commerce, exporter of tea; Kinsaku Soda, banker; Akira Shito, president silk conditioning house.

Kobe—Kojiro Matsugata, president chamber of commerce; Kumenjiro Taki, manufacturer; Shinkichi Tamura, exporter.

Nagoya—Kinnosuke Kanno, banker; Tominosuke Uyetona, vice president chamber of commerce, director Sharyo Kaisha (wheel company); Morimatsu Ito, banker.

SHIPPING BY DIRECT CARGO TO EGYPT.

A commercial event which Consul D. R. Birch thinks may prove of immense importance to the development of American trade with Egypt and the Sudan is the recent arrival at Alexandria of a 5,000-ton steamship direct from Philadelphia and New York loaded with American coal and corn, concerning which he says:

The features of this venture—the direct freight service, the introduction into Alexandria of American coal and of American corn—are each in the nature of an experiment, and upon the results achieved will probably depend the future business. It is recognized in Alexandria, by commercial men familiar with the trade situation, that the first step toward the increased sale in Egypt of both raw and manufactured American products is a regular and frequent service of freight steamers direct from New York to Alexandria. Its lack has been the greatest drawback to the expansion of American trade here. The Egyptian customs figures place the value of American imports at Alexandria for 1908 at \$1,019,040, but there are many indications that this figure was low and not representative of the volume of American business done with this port. It is the practice of the local customs authorities to credit imports to the nation whence comes the importing steamer. The bulk of American products now reach Alexandria through transshipment at either Liverpool or Naples, and in the absence of American marks on the packing the customs office is prone to class these goods as English or Italian. A further disadvantage which the importer of American goods at Alexandria has had to contend with in the past by reason of the absence of direct freight communication with the United States is the delay that results by a laying over of the goods at the port of transshipment. A dealer in American furniture informed the consulate that a recent consignment of American office furniture was 32 days in transit from New York to Alexan-

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SOLE BUILDERS OF THE

PORTER-ALLEN AUTOMATIC STEAM ENGINE the use of which insures a high economy in steam consumption, and a minimum cost of maintenance.

The design is unsurpassed for simplicity and compactness, while the details of valves and gears, bed-plate construction, etc., are greatly liked by all users.

Adapted to every class of work.

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ROLLS

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WHEELING MOLD & FOUNDRY CO.,

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WHEELING W. VA

EVEN DEPTH CHILLED ROLLS.

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ROTARY, STRAIGHT and ANGLE

Roll-Turning Tools,

SOLID STEEL HEAR K NIVES

Roll-Turning Plugs,

Special Blanking Dies

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dria via Naples. That meant a delay of over two weeks at Naples, as it is often possible to do this trip in 16 days.

It is confidently believed by the promoters of the New York-Alexandria direct line that American exporters will avail themselves of this new service in sending their goods to Egypt. The vessel just from New York is the *Embiricos*, of the National Steam Navigation Line of Greece.

TRADE OPPORTUNITIES ABROAD.

Counsul Abraham E. Smith makes a report to the U. S. Bureau of Manufacturers from Victoria on the new \$1,000,000 iron works and smelting plant recently established at Port Townsend, State of Washington. It is deriving its hematite or soft ores from Vancouver Island, Canada, where the company's deposits are said to contain 20,000,000 tons.

Consul F. I. Bright, of Huddersfield, calls attention to an iron and steel combine being carried out in England with \$10,000,000 capital stock. The annual productive capacity will be 50,000 tons of spiegeleisen, and 50,000 tons of ferromanganese.

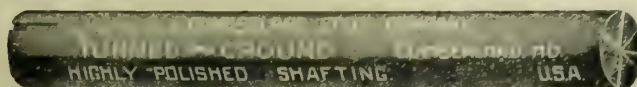
The new Peking city water works are described in a newspaper article forwarded by consul Gracey, of Tsingtau. The system is modern throughout, with various pumping stations, settling tanks, filtration beds, water towers, etc., which will amply supply China's capital with water, instead of the insanitary wells.

Vice-Consul-General S. J. Fuller, of Hongkong, sends newspaper articles relating to the plan for widening and deepening the harbor of Hoihow, 270 miles south of the former Chinese city. The cost is estimated at about \$300,000 gold. The clippings in question will be loaned to interested parties by the Bureau of Manufacturers.

There is no apparent demand in Germany for foreign steel shafting, reports Consul-General Robert P. Skinner of Hamburg. He suggests, however, that American steel shafting might be sold in South America through large Hamburg exporters, a selected list of which he sends for consultation at the Bureau of Manufacturers.

The Transvaal Government and the Central South African Railways Administration have each made a donation of \$75,000 toward the erection of electrical works for the treatment of ore mined in the Pretoria district. The ore is stated to be capable of producing the highest quality of steel.

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Not only perfectly straight, but round, true to size and highly polished.
Send for price list No. 22.



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REVERSING
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MEXICO'S IRON ORES.

The iron deposits of Mexico are well known to be very extensive. The celebrated mountain of Durango, the Cerro del Mercado, is one of the greatest iron deposits of the world. It is estimated to contain 300,000,000 tons of 70 per cent ore above the level of the plains surrounding it. There is another mountain near the mouth of the Balsas, in the state of Michoacan, which is destined to figure conspicuously in the future iron production of Mexico. The Las Truchas mountain, of Michoacan, shows above the plain-level 1,000,000,000 tons of ore low in phosphorus and running over 60 per cent iron. Other deposits at Alvarez, in Colima, show the possibility of extracting several hundred million tons of good ore. All along the Pacific coast, in fact, from the Gulf of California to the border of Guatemala, there is abundance of iron ore. The iron deposits of Guerrero are of exceptional importance—perhaps the most important of the Mexican Republic. The iron ores of Zimapan, Hidalgo, are already well known, while the iron deposits of Vera Cruz are of even greater importance, because of their comparative proximity to the Gulf and ocean transportation. There are large quantities of high-grade ores in the State of Nuevo Leon, owned by an iron and steel company which has a \$10,000,000 plant at Monterey. There is a considerable amount of iron in the state of Jalisco; the deposits of Coahuila and Nuevo Leon are considered to be the most important.

GERMAN REFRIGERATOR CAR INVENTION.

Consul-General Richard Guenther, of Frankfort, has compiled from a German publication the following description of a new type of refrigerator car, which furnishes its own refrigeration:

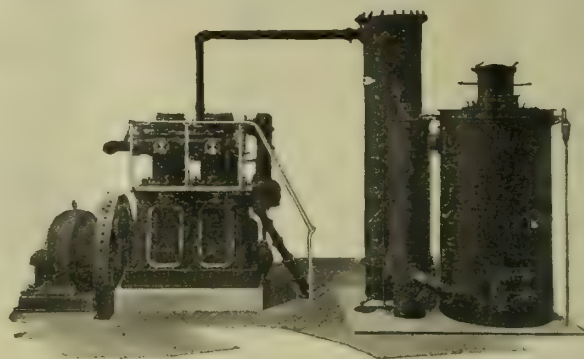
The car is covered with a nonconductive material. At one end a small compartment is partitioned off in which a compressor is placed, which is put in motion by belts connected with the nearest axle. Methylchloride is used for producing cold. This can be volatilized at a low pressure, does not affect the copper pipes, and does not smell as bad as ammonia or sulphurous acid. While the car is in motion the compressor sucks the gas from the condensing coil, which is attached to the roof of the car and presses it through a water tank into the condenser below the car, which is supplied with a collector for the liquid methylchloride. From there it is admitted into the cooling coils. Valves regulate the temperature of the gas in entering and leaving the cooling coil and also make it possible that only dry saturated gas is provided for the

THE WARREN GAS ENGINE

ECONOMICAL—DURABLE

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NATURAL AND PRODUCER GASES



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STEAM HAMMERS

SPECIAL TYPE,

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MADE IN ALL SIZES FROM 400 LBS. TO 3,500 LBS.

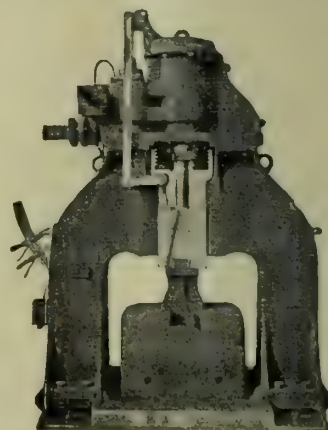
Operation, Construction, Workmanship
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No. 407.

Dixon's Flake Graphite

is without a substitute

It resists the great heat generated in gas engine cylinders, it can't be frozen. Acids or alkalies do not affect it. Do you know of any other lubricant that can stand such tests? Write for free descriptive booklet.

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compressors. The arrangement of the collectors for the liquid methylchloride between condenser and cooling coils renders the cooling of the car independent of the motion of the compressor, especially when the car is not in motion.

At a speed of 25 miles an hour and at 20 degrees temperature (Celsius) of the air, the interior of the car can be reduced to zero (Celsius) in 40 or 45 minutes.

"THE LITTLE MOUNTAIN STATE."

In his address at the Seattle Exposition on West Virginia Day, Governor W. E. Glasscock of that State said among other things of the war-born Commonwealth:

The total area of West Virginia is 24,715 square miles; of this, 24,580 square miles, or 15,731,200 acres, are lands consisting of valleys, hills, tablelands and mountains, and 135 square miles of water surface. This area is almost 20 times that of Rhode Island, 12 times that of Delaware, five times that of Connecticut, three times that of Massachusetts, more than twice that of Maryland, twice that of Belgium, twice that of Holland, a third larger than Denmark, and more than a third larger than Switzerland.

The longest straight line that can be drawn across the State from a point on the Blue Ridge, one-half mile east of Harper's Ferry, to Virginia Point, at the mouth of Big Sandy river—say between the two towns of Harper's Ferry, in Jefferson county, and Kenova, in Wayne county—will measure 274 miles. The longest line that can be drawn through the State from north to south, extending from the northern limit of Hancock county to a point on Dividing Ridge on the southern border of McDowell county, will measure 245 miles.

Such is West Virginia, which, in the days of geographical ignorance, as many persons yet living can remember, was referred to in the text-books as the "Little Mountain State."

ECONOMIES PRODUCED BY RAILROADS.

Writing of economies effected during the last two years by the great railroad systems, a Wall street reviewer thus comments:

We now know that nothing but the vast economies enforced upon the railroads made it possible to report much of any net earnings last year. How great these economies are is illustrated by the fact that the Baltimore & Ohio reduced the cost of operation by nearly \$7,000,000; the Atchinson by nearly \$3,000,000, and the Southern Pacific by nearly \$6,000,000.



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A-5 DRILL

For coal, slate, clay, gypsum, or any material an auger bit will penetrate.

COMPLETE

Mine and Tipple Equipment.

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DRYERS _____ CATALOG N° 16

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ELEVATORS AND CONVEYORS.

To Mill Owners:

You retain a lawyer or a physician because you know nothing of their professions and because you believe they are experts. You follow their advice implicitly, confident that good results will follow their skill, judgment, knowledge and experience. They leave the fabrication of metals to you because they know nothing about it. It is the same in the electric lighting and power business. You seek economy and efficiency. Your case is for results—not methods. The solution of electrical problems is our business. We have specialized and claim to be experts. Our skill and experience are at your service free of cost. The judgment of our experts in matters relating to the proper illumination of your factory or to the installation of the most economical power will save you much annoyance and much money. Call Contract Department 3200 Grant and enlist their services.

ALLEGHENY COUNTY LIGHT CO.
435 Sixth Ave., Pittsburgh, Pa.

The leading Pacific railroad systems reduced operating expenses by nearly \$14,000,000. The Pennsylvania Railroad was able to carry on its business with a reduction of expenses of a little over \$11,000,000, and the New York Central by nearly \$4,000,000.

These reduced expenses are going to affect general business in two ways. They have been so detailed, involving often the postponement of necessary equipment and improvements, that this equipment must be bought and these improvements made. It is easy to see that large expenditures are sure to be made. These will be reflected in increased earnings, not only of the steel companies, but in those of corporations of manufacturing and mining machinery, and as well as in increased demand for labor.

So, also, this method of getting the railroads down to hard pan, so to call it, will be followed by such an increase in net earnings as should justify considerable improvement in dividends. It is observed that the men in the financial districts who should know, count almost as much upon the improvement in railway earnings for the stimulus to increase prosperity as they do upon the marketing of \$8,000,000,000 worth of agricultural products.

EMPLOYERS' UNIONS IN GERMANY.

The German Imperial Statistic Department has just published a report dealing with 2,591 employers, unions, making available some interesting particulars concerning these important organizations.

The German employers' unions have been working in a thoroughly rational and systematic manner for a little more than five years, a fact which enhances the splendid results they have attained. They rest on a double basis—firstly, the branch or special trade basis, comprising employers within the same branch of business; secondly, on what may be called the local or district basis, under which heading come "mixed" employers within a certain place or district; such unions comprise employers of all branches of business living within the district in question. According to the new statistics, the special trade employers' unions, including the large central institutions, the Main Centre of German Employers (Hauptstelle Deutscher Arbeitgeber-Verbande) and the Union of German Employers (Verein Deutscher Arbeitgeber-Verbande), which also comprise mixed unions, embrace 159,304 concerns, which employ 3,648,679 hands. These figures, imposing as they are, must not be looked upon as fully exhaustive, some reports not being included. The local or district employers'



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BAIRD MACHINERY COMPANY,

MACHINE TOOLS

of all kinds for the Machine Shop, Foundry, Planing Mill, Pattern Shop, &c., &c. Machinists' Tools and Supplies.

LARGE STOCK SECOND-HAND MACHINERY.

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Second hand Department: Cor. 23d and Smallman Sts, **Pittsburgh Pa.**

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W. N. KRATZER & CO. Manufacturers

STRUCTURAL STEEL WORK

Buildings, Bridges, Roof Trusses, Girders, Columns, Builders' Iron Work
Beams, Channels, Angles, Zee Bars, Etc.

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**HERE IS THE SPACE
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unions comprise 48,462 concerns which employ 1,592,084 hands. Adding to the above the district employers' unions, which have not joined any of the main organizations, the number of employers' concerns comes out at 169,381, employing an aggregate of 3,959,073 hands. The two central organizations referred to comprise 38,644 employers' concerns, with 2,438,142 hands.

RAILROAD SHORTSIGHTEDNESS.

The American Metal Market, New York, in an issue of a few days ago, calls attention to the folly of railroad buying methods, as shown by the history of the past year in the steel trade. It says in part:

"Last winter, when the mills were idle half the time and were willing to make low prices, an order of any size from a railroad was almost a curiosity, but as soon as the mills get comfortably filled with business for other people, the railroads suddenly discover that they need enormous quantities of mill products, and are willing to pay 10, 20 or even 30 per cent higher prices. It is evident that the leading railroads are suffering from very poor management. They have had no lack of money. All through the panic they carried cash balances far in excess of their needs, and during the past year they have had no difficulty in marketing legitimate issues of bonds at fair rates of interest. They knew their properties were running down physically and that a "stitch in time" costs less and goes farther than hysterical sewing when the deterioration has gone too far. Still they pursue their policy of refusing to buy or keep up their properties when materials are cheap, and making trouble for everybody else by rushing into the market when prices are advancing.

"There is something suggestive of "rocking the boat" in the policy of the railroads. When the boat rocks naturally in the direction of inactive trade, they push it farther by their hysterical clamor and withdrawal from the market, and investors dump the securities into hands of waiting financiers. When the boat shows a disposition to right itself they push it over in the other direction by rushing into the market to buy everything in sight; and the investors who thought the end of the world had come tumble over themselves to repurchase the securities they had sacrificed when their side of the boat was going down.

"It has come to such a pass that the welfare of half the industries of the country is dependent upon the will of a small group of financiers who control the management of the railroads, and who, at the same time, play both

Established 1852.

Incorporated 1901

WM. SWINDELL & BROTHERS, ENGINEERS AND CONTRACTORS

Open Hearth and Crucible Steel Plants, Swindell Recuperative System for Heating and Annealing, Water Seal Gas Producers, 1400 in operation, Regenerative Heating Furnaces, Malleable and Foundry Melting Furnaces, Gas Furnace Valves, 21 in. to 36 in. Diameter,

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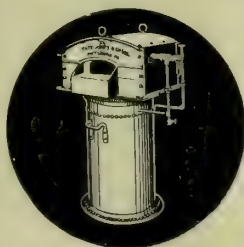
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Builders of Every Description of
FURNACES AND GAS PRODUCERS
—FOR—
IRON AND STEEL WORKS.



Reduce Your Power Costs With
KIRKWOOD OIL BURNING FURNACES

Let us tell you how.

TATE JONES & CO., Inc.,
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G. W. McCLURE, SON & CO.

Sole Representatives, THE McCLURE (Massicks & Crooke) Patent
Three Pass Fire Brick Hot Blast Stoves. Also Two Pass Stoves
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Open-Hearth Furnaces, Heating Furnaces, Soaking Pits—All Kinds of Brick Work.
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ends against the middle in the stock market. When the railroads buy heavily the country is prosperous, prices of iron and other commodities advance, and railroad stocks are marked up and unloaded on the public. When the railroads cease their purchases and remain out of the market, iron, coal, lumber and a whole chain of industries are depressed and the people dump their investments

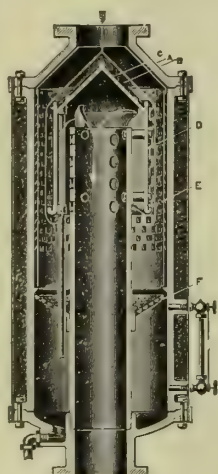
into the wine press of speculation* * * It is a serious matter when the industries of the country and the employment of millions of people are dependent upon the will of a few people who are disposed to "rock the boat" for speculative profits."

Try a Want or For Sale ad in the Industrial World.

ELECTRIFICATION PLANS ON CHILEAN RAILWAYS.

Consul Alfred A. Winslow makes the following report from Valparaiso to the State Department at Washington on the development of the railways of Chile:

The Chilean Government has appointed a commission under the direction of the Ministro de Industria y Obras Pub-



Sweet's Steam Separators Surely Separate.

Deliver Steam 99 8-10 Dry.

Remove 99 per cent of the Oil.

Sweet Separators are Receiver Separators with ample room for separation, steam storage and lots of water. They purify and dry the steam then store it above and independent of the water chamber. Water chamber is at the bottom and large. Thousands in use—many of them sold on repeat orders.

Sweet Separators keep Heating Systems, Boilers, Condensers, etc., free from oil and the expensive results that follow the use of oil-laden steam. They deliver exhaust steam pure and ready for use in Laundries, Dye Houses, Ice Plants, etc. Made in all styles and sizes from 50 to 24,000 lbs in weight. Get the Catalog.

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Year.	Output of Universal Portland Cement-bbls.	Percentage of total American output of Port- land Cement.
1900	32,000	0.38%
1901	164,000	1.29%
1902	319,000	1.85%
1903	463,000	2.08%
1904	473,000	1.78%
1905	1,735,000	4.92%
1906	2,076,000	4.55%
1907	2,129,000	4.36%
1908	4,535,000	8.89%
1909	*6,000,000	

*Estimated.

Additional capacity now under construction will give us an output of 8,000,000 barrels for 1910.

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Portland Cement Company
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—MANUFACTURERS OF—

Pumping and Hoisting Machinery,
Mine Fans, Air Compressors, Etc.

—COMPLETE EQUIPMENTS—

For Coal and Coke Works.

licas, at Santiago, to study the question of electrifying the section of the state railways between Santiago and Valparaiso, a distance of 115 miles. It is proposed to complete double tracking of this portion of the state railways, for which about one half of the grading has been completed. It is understood that parties have made an offer to put in the installation, including the hydraulic electric plant, at a price that would make a handsome saving for the Government in operating expenses over the present steam motive power employed, since coal is so very expensive.

It seems probable that something will come of this proposition, and it might be well for American interests to investigate the matter, as it is only a beginning that will eventually cover the whole government railway system, and the parties getting the first contract will be in on the ground floor for the balance.

Work on the tunnel through the Andes on the line of railway between Valparaiso and Buenos Aires is progressing rapidly, and at the present rate will be completed before the end of the present year, when there will be good rail connection between these two cities.

Americans have made inquiries as to positions for electrical engineers in Chile. Managers and superintendents receive \$200 to \$500 per month; electrical engineers \$125 to \$175; foremen and inspectors, \$40 to \$125; mechanics, \$1.25 to \$2.25 per day. It has been easier to secure men from Europe, owing to better mail facilities, but there is now a fast mail service with the United States.

The Government is pushing work on the Longitudinal Railway, north of Valparaiso, with a force of 1,700 men. There is a large amount of tunnel work on this line. Interested parties should address the Direccion General de Industria Obras Publicas, Santiago, Chile.

The Argentine Southern Railway Company has had a corps of English engineers studying and surveying the Cordillera for the past six months in search of a suitable route over which to build a road to connect that part of Argentina with the southern part of Chile. Owing to the setting in of winter they were obliged to suspend the investigation until the opening of next season. During the six months they found nothing very encouraging, the mountains in that region being very rugged, and the outlook is not bright.

The more responsible citizens you have in a community, the more people who anchor to the earth and own their own homes, the more people who are honest, industrious, sober and frugal, the more people who love God and keep his commandments, the greater force that community is for good in the world.

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"SABLE" BRANDS { **SPECIAL STAY BOLTS**
IRON and STEEL **SHEETS** **BLACK and GALVANIZED**
ZUG IRON & STEEL CO. (**SABLE IRON WORKS**) **PITTSBURGH, PA.**
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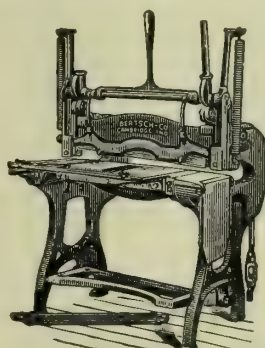
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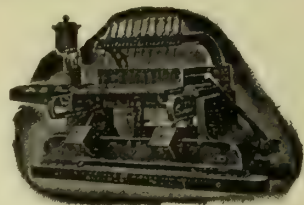
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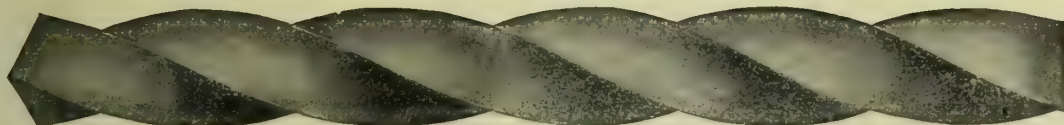
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CARNEGIE STEEL COMPANY

PITTSBURG, PENNA.

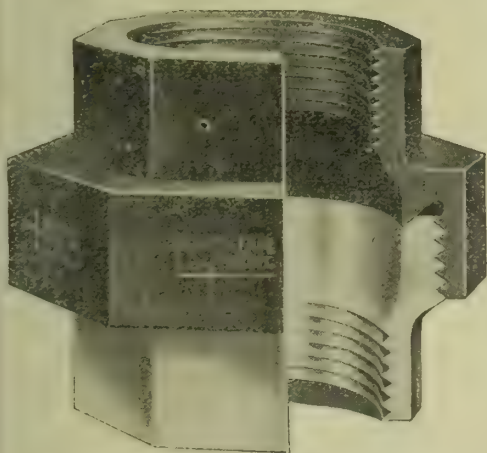
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LARRY TRACK IS COST-
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LESS YOU ARE USING
STEEL TIES

Let us give you complete information.

A LITTLE HISTORY



"The Union With no Inserted Parts."

- † Some points about the history of the "Kewanee" Union may be of interest.
- † A number of years ago there existed in Kewanee, Ill., a factory which made steam heating boilers, radiators, etc. In order to sell these boilers it was necessary to take contracts to heat a building with steam and then install the apparatus.
- † Naturally, a number of steam fitters were employed, and when going over the plans, in many cases, the master steam fitter would recommend a malleable union at various points.
- † The President of the Company, however, would never allow a malleable union to be used; he would say: "A malleable union is a misnomer; after it has been up a while it is of no use; it is then only a coupling, because the threads rust together at the nut and it cannot be disconnected except by spoiling the fitting. If you must use a union, use a flange union."
- † Now, a flange union is an unsightly fitting in a residence, and many were the discussions between the steam fitters (who naturally desired a neat, workmanlike looking job) on the one hand, and the President of the Company on the other. This President finally passed away, and his successor, who had been a witness to the frequent controversies regarding the union question, conceived the idea one day that if he could invent a union which could be disconnected and reconnected an indefinite number of times he would have a fitting which would meet a long felt want.
- † The President went over the matter with steam fitters and other practical men without much result, but finally the idea occurred to him to make a union with a brass to iron thread connection.
- † The result at first was crude, but patterns were made and changed, and to-day the finished product (the result of this idea) is seen in the "Kewanee" Union.
- † An iron to iron thread connection will rust together. A brass to iron thread connection will not rust together, and can be disconnected and reconnected almost indefinitely.
- † The "Kewanee" Union has other points of advantage, but it remains to-day absolutely unique in these respects—brass to iron thread connection and has no inserted parts.
- † Literature will be gladly forwarded to anyone interested in the union question.

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ELECTRIC FAULT FINDER.

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ELECTRIC LIGHTING MACHIN'RY.

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Southwark Foundry & Machine Co.
..... Philadelphia.

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Jeffrey Manufacturing Co.. Columbus, O.
Otis Elevator Co. Pittsburgh.
Scaife Fdry & Mach. Co.... Pittsburgh.

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Alex Laughlin & Co. Pittsburgh.
Chambersburg Engineering Co....
..... Chambersburg, Pa.

Duff, Samuel E. Pittsburgh.
Link-Belt Company Philadelphia.
Julian Kennedy Pittsburgh.

G. W. McClure Son & Co. ... Pittsburgh.
Morgan Construction Co.
..... Worcester, Mass.

Smythe, The S. R. Co.... Pittsburgh.
Wm. B. Scaife & Sons Co.... Pittsburgh.
United Eng. & Fdry Co.... Pittsburgh, Pa.
William Swindell & Bro. ... Pittsburgh.

ENGINEERS—INSPECTING.

Gulick-Henderson & Co.... Pittsburgh

ENGINEERS—LABORATORY.

Gulick-Henderson & Co.... Pittsburgh

ENGINEERS (Mechanical).

Link-Belt Company Philadelphia.

EQUALIZING GEARS.

Link-Belt Company Philadelphia.

ENGINES—STEAM.

Connellsville Mfg. & Mine Supply Co.
..... Connellsville, Pa.

H. J. Koontz Pittsburgh.
Mackintosh, Hemphill & Co.. Pittsburgh.

Mesta Machine Co. Pittsburgh.
Southwark Foundry & Machine Co.
..... Philadelphia

Wickes Brothers Pittsburgh.

EXHAUST PIPE HEADS.

Direct Separator Co. Syracuse, N. Y.

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Chambersburg Engineering Com-
pany Chambersburg, Pa.

Cleveland Crane & Eng. Co., Wickliffe, O.

FLANGE COUPLINGS.

Cumberland Steel Co.... Cumberland, Md.

FLIGHT CONVEYORS.

Link-Belt Company Philadelphia.

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W. N. Kratzer & Co.... Pittsburgh.

Wm. B. Scaife & Sons Co.... Pittsburgh.
Heppenstall Forge & Knife Co....
..... Pittsburgh.

Mesta Machine Co. Pittsburgh.

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Chambersburg Engineering Com-
pany Chambersburg, Pa.

United Eng. & Fdry Co.... Pittsburgh, Pa.

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Cleveland Crane & Eng. Co. Wickliffe, O.

Meehan Boiler & Con. Co. Lowellville, O.
Northern Engineering Works
..... Detroit, Mich.

Wickes Brothers Pittsburgh.

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Clearfield Fire Brick Co.... Clearfield, Pa.

Dover Fire Brick Co. Cleveland, O.

Kier Fire Brick Co. Pittsburgh.

Pittsburgh-Buffer Co. Pittsburgh.

Stuart Fire Brick Company.. Pittsburgh.

Sharon Fire Brick Co. Sharon, Pa.

Jos. Soisson Fire Brick Co.
..... Connellsville, Pa.

Sandy Ridge Fire Brick Co....
..... Sandy Ridge, Pa.

The Stowe-Fuller Co. Cleveland, O.

United Fire Brick Co. Pittsburgh.

W. H. Wynn & Co. West Decatur, Pa.

FITTINGS (Electric Crane).

Electric Con. & Mfg. Co.... Cleveland, O.

FITTINGS (Malleable and Cast Iron.)
National Tube Co.... Pittsburgh, Pa.

FIRE ESCAPES.

W. N. Kratzer & Co.... Pittsburgh.

W. G. McKenney & Co. Pittsburgh.

FIREPROOFING.

W. N. Kratzer & Co.... Pittsburgh.

**FEED WATER HEATERS, FILTERS
AND PURIFIERS.**

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Petroleum Iron Works ... Sharon, Pa.

Wm. B. Scaife & Sons Co.... Pittsburgh.

Wickes Brothers Pittsburgh.

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Julian Kennedy Pittsburgh.

Alex Laughlin & Co.Pittsburgh.
Morgan Con. Co.Worcester, Mass.
G. W. McClure Son & Co.Pittsburgh
Wm. B. Scaife & Sons Co..Pittsburgh.
The S. R. Smythe Co.Pittsburgh.
William Swindell & BroPittsburgh.
Tate, Jones & Co., Inc.Pittsburgh.

FLAG STAFFS.

National Tube Co.....Pittsburgh, Pa.

FLANGES (Cast and Malleable.)

National Tube Co.Pittsburgh.

FRICTION CLUTCHES.

Link-Belt CompanyPhiladelphia.
Wickes BrothersPittsburgh.

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American Sheet & Tin Plate Com-
panyPittsburgh.
McCullough Iron Co..Wilmington, Del.

GAS BURNERS.

Tate, Jones & Co., Inc.....Pittsburgh.

GAS PRODUCERS.

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Morgan Con. Co.....Worcester, Mass.
Riter-Conley Mfg. Co.Pittsburgh.
Struthers-Wells Co.Warren, Pa.
The S. R. Smythe Co.Pittsburgh.
William Swindell & Bro.Pittsburgh.

GAS ENGINES.

Mesta Machine Co.Pittsburgh.
Struthers-Wells Co.Warren, Pa.
Wickes BrothersPittsburgh.

GATE SHEARS.

Cincinnati Punch & Shear Co., Cincinnati
Cleveland Crane & Eng. Co., Wickliffe, O.

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Taylor-Wilson Mfg. Co....Pittsburgh.
Mesta Machine Co.Pittsburgh.

GEARING (Bevel, Mitre, Spur, etc.)

Link-Belt CompanyPhiladelphia.

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Meehan Boiler & Con. Co. Lowellville, O.
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GREASE.

Jos. Dixon Crucible Co...Jersey City.

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Mesta Machine Co.Pittsburgh.
Scaife Fdry. & Machine Co..Pittsburgh.

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panyChambersburg, Pa.
National Tube Co.Pittsburgh.

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Chambersburg Engineering Com-
panyChambersburg, Pa.
Wickes BrothersPittsburgh.

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LINK-BELTING.

Jeffrey Manufacturing Co..Columbus, O.
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Industrial WorksBay City, Mich.
Wickes BrothersPittsburgh.

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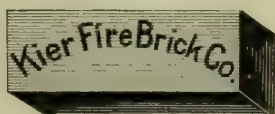
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The Heinle CompanyPittsburgh.

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Mesta Machine Co.Pittsburgh.
Scaife Fdry. & Machine Co...Pittsburgh.
Seaman-Sleeth Co.....Pittsburgh.
United Eng. & Fdry Co...Pittsburgh, Pa.
Wickes BrothersPittsburgh.

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.....Pittsburgh.

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Mackintosh, Hemphill & Co..Pittsburgh.
Mesta Machine Co.Pittsburgh.
Morgan Construction Co.
.....Worcester, Mass.

McLanahan & Stone, Hollidaysburg, Pa
Phillips & McLaren Co.....Pittsburgh.
Scaife Fdry. & Mach. Co...Pittsburgh.
United Eng. & Fdry Co...Pittsburgh, Pa.
Wm. B. Scaife & Sons Co...Pittsburgh.
Wheeling Mold & Foundry Co....
.....Wheeling, W. Va.
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.....Pittsburgh.
Samuel Trethewey & Co. ...Pittsburgh.

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C. O. Bartlett & Snow Co..Cleveland, O.

ROPE TRANSMISSION.

Jones & Laughlin Steel Co...Pittsburgh.
Link-Belt CompanyPhiladelphia.
Mesta Machine Co.Pittsburgh.
C. O. Bartlett & Snow Co..Cleveland, O.

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Cleveland Crane & Eng. Co., Wickliffe, O.

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Cumberland Steel Co...Cumberland, Md.

SAND-HANDLING MACHINERY.

Link-Belt CompanyPhiladelphia.

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Cincinnati Punch & Shear Co., Cincinnati
Cleveland Crane & Eng. Co., Wickliffe, O.

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Cincinnati Punch & Shear Com-
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Cleveland Crane & Eng. Co., Wickliffe, O.

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Chambersburg Engineering Com-
panyChambersburg, Pa.

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Chambersburg Engineering Co....
.....Chambersburg, Pa.
Samuel Trethewey & Co...Pittsburgh.
Wickes BrothersPittsburgh.

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Zug Iron & Steel Co.Pittsburgh.

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Electric Con. & Mfg. Co..Cleveland, O.

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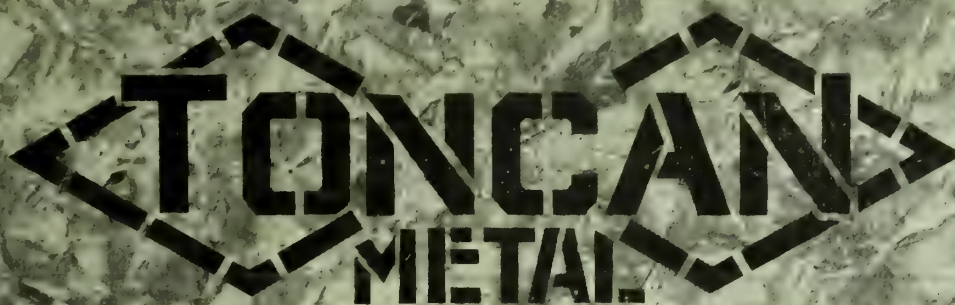
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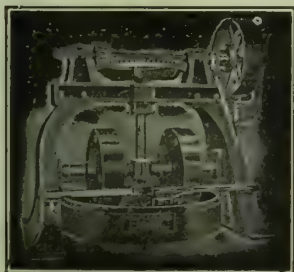
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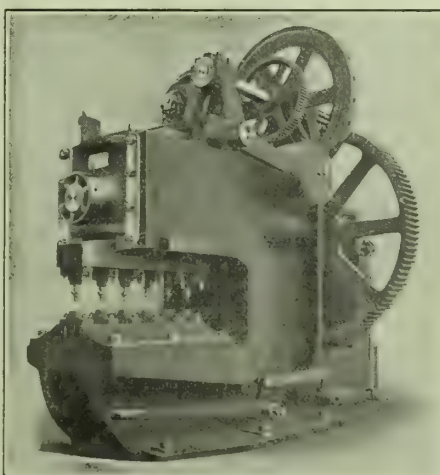


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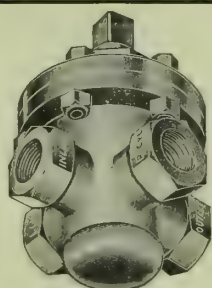
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INDUSTRIAL WORLD

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43d Year. No. 37.

PITTSBURGH, PA.

MONDAY, SEPTEMBER 13, 1909.

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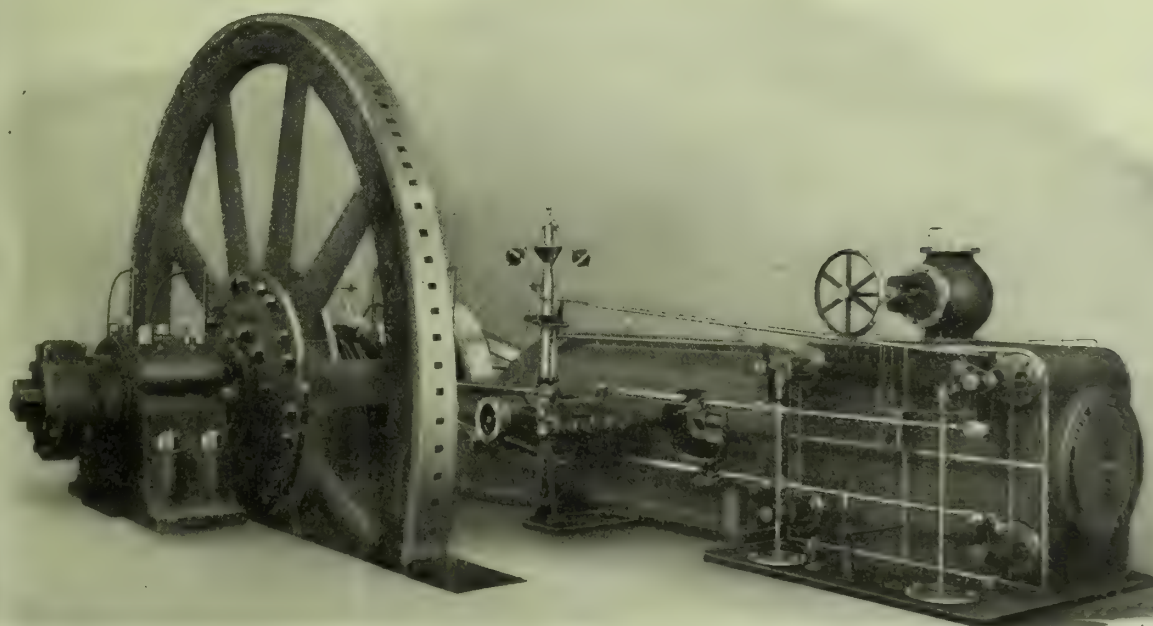
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INDUSTRIAL WORLD

FORTY-THIRD YEAR.

PITTSBURGH, PA., SEPT., 13, 1909.

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Summary of General Iron and Steel Markets

SEPTEMBER TO SET NEW RECORD IN PIG IRON PRODUCTION FOR THE COUNTRY—RAIL ORDERS ASSURE WINTER OPERATION OF THE RAIL MILLS—UPWARD TREND OF PRICES IN STEEL LINES—DEATH OF HARRIMAN CANNOT AFFECT RAILROAD BUYING—FOREIGN ORE IMPORTATIONS.

The number of new furnaces in blast or preparing to go in blast by the 15th of the present month, indicates that September may set a new high mark in the country's pig iron production. Complete figures for August show that the totals for the month fell less than the 100,000 tons short of the record month, October, 1907, when the total was 2,336,972 tons. Last month's total was 2,246,480 tons, while the steel making companies for August actually set a new high mark for the production of steel-making irons—the month's total output of 1,591,991 tons being 77,441 tons in excess of their record on the best previous month, October, 1907.

The Steel Corporation produced 1,102,288 tons of pig iron during the month. Records in production of semi-finished steel were made by nearly all the large companies. The Republic Iron & Steel Company produced 55,114 gross tons of blooms, billets and sheet bars for the month at its Bessemer plant at Youngstown—heating the best previous month's production by 5,000 tons. The ending of the strike at the Pressed Steel Car Company's plant in the Pittsburgh dis-

trict means an additional consumption of 500 tons of plates a day, which will be drawn from the Carnegie Steel Company. One new stack will be blown in by the Steel Corporation at Gary during this month, and an additional new stack will be ready for blowing in each month between now and the first of the year.

Additional rail orders from the Western roads, for delivery between October 1 and April 1 of next year, insure the operation of the rail plant at Gary almost to its full capacity through the winter. Of the 100,000 tons of rail orders taken by the Illinois Steel Company, all but 10,000 are for open hearth and will be rolled at Gary. Eastern roads are negotiating with the Carnegie Steel Company for rail tonnage for winter rolling, which is expected to keep the Carnegie Company rail mills busy during the winter months.

The death of E. H. Harriman cannot affect railroad equipment business even indirectly. All the orders for track material and rolling stock have already been placed by the Harriman lines—in fact, they were among the first in the

field. With Pittsburgh shippers there is anxiety, however, over the possible effect of Mr. Harriman's death on the plans for the rehabilitation of the Wabash Pittsburgh terminal and the reported utilization of the terminal facilities by the Erie system.

Stories of the prospective shipment of German pig iron from Dusseldorf to this country agitated the market during the early part of the week, but the cable reports were discounted in New York, and evidently were the result of an error in translation, the purchase referred to having been spiegeleisen. Announcement has been made, however, of further importations of Swedish ore for 1910, large tonnages having been engaged by Eastern furnaces. The Lake movement of iron ore for the month made a new high record, the total tonnage being 7,193,000.

Although no formal announcement has been made by the Carnegie Steel Company withdrawing its price of 1.35c, Pittsburgh, for steel bars, it is refusing to take business for delivery after November 1 at that price and is filled up with present contracts for two months to come, so that in effect the minimum on steel bars is up to 1.40c, the price announced by the independents three weeks ago. Makers of merchant iron pipe also have put up the quotations \$4 a ton, and makers of steel shafting have increased their price \$3 a ton.

Extraordinary efforts are being made by the fabricators of structural steel to hold prices at new levels, which are \$3 or more a ton higher than those accepted during August. There is still keen competition on large contracts, however, and the new prices are not being strictly adhered to. Demands for plates and shapes are very heavy, and the mills are making every effort to avoid falling further behind in deliveries. Specifications on sheets also are very heavy, and the American Sheet & Tin Plate Company is pushing its sheet mills to their utmost. The strike in the sheet and tin plate plants is pretty thoroughly broken. During the past fortnight the Steel Corporation has bought a considerable tonnage of coke in the open market, the shortage of labor in the coke fields preventing the Frick ovens from enlarging their output in order to supply the demand of the combine mills. Reports that the Corporation is in the market for 40,000 to 50,000 tons of Bessemer iron are not confirmed, however.

Pressed Steel Car Strike Is Settled; Plant to Be Operated to Capacity

RESUMPTION AT McKEES ROCKS AFTER WARFARE OF NEARLY TWO MONTHS—MEN ACCEPT TERMS OFFERED WEEKS AGO.

A settlement was effected on September 8 of the disastrous strike that has been on at the plant of the Pressed Steel Car Company, in McKees Rocks since July 14 last, and the 6,000 men returned to work on September 9. Meantime, extensive repairs had been made at the plant and preparations were made to rush production to its utmost capacity. As soon as possible the plant will be put on double turn. Orders totalling over 5,000 cars were awaiting the resumption of operation. Orders have been given to start the Woods Run plant of the company by October 15, which will give employment to 3,000 men.

The strike was precipitated by the refusal of 600 riveters to remain at work on July 14. The original striking workmen were taken back by the company, with the exception of the members of the strikers' committee, who submitted to discharge in order to gain a settlement. Under the new system, on which the settlement was effected, a minimum wage is fixed. All new men were retained, and strikers for whom there are no jobs were not taken back. There is nothing in the agreement, as finally accepted by the striking workmen that was not offered by the company six weeks ago.

In order to correct misleading statements appearing in the newspapers, the company, through its general manager, J. B. Rider, made the following statement as to the settlement:

The company has not agreed or promised to increase at this time the wages of its workmen, but does expect that as general business conditions improve its workmen will share in the benefits resulting therefrom. Up to the present time, while there has been additional orders for cars, there has been no improvement in prices.

The company has not promised to abandon the piece pooling system, but if it develops that this system can be improved, by increasing the number of pools and reducing the number of men in a pool, this will be done.

The company has arranged that the amount deducted for accident insurance shall be plainly stated on the pay envelopes and the men receive cards certifying that they are entitled to benefits under the insurance plan.

The company has never knowingly tolerated any imposition upon its employees and intends that all employees shall always have fair and proper treatment. For this purpose it has established an information bureau for the

investigation of any complaints its employees make, and all complaints that have already been made have been and will be promptly investigated. The company will not tolerate any grafting or other imposition.

TWO MACHINE SHOP FIRES.

Railway Steel Spring Company of Pittsburgh Is Heavy Sufferer.

The machine shop of the Railway Steel Spring Company, Pittsburgh, was practically destroyed by fire September 8, causing damages amounting to about \$20,000. The company will rebuild immediately. A part of the machinery can be saved. The company had large orders on hand for immediate delivery.

The Synnvestedt Machine Company's plant, Pittsburgh, devoted to the manufacture of cotton picking machinery, was destroyed by fire September 9. The loss is estimated at \$50,000. Considering that the fire will delay the practical use of a most important invention, it will be indirectly responsible for a greater loss. In the building were three cotton picking machines, which were to be sent south this year to pick cotton. These are reported to be damaged beyond repair. The machine company manufactured the machine for the American Cotton Picking Company, a concern in which prominent capitalists are interested and which Theodore Price some time ago offered to capitalize at \$50,000,000.

The machinery of the company also has been ruined, which adds to the heavy loss.

New Boiler Sales.

The Babcock & Wilcox Boiler Company, with offices in the Farmers Bank building, Pittsburgh, reports the following sales during the week:

Republic Iron & Steel Company, Youngstown, O., 3,000 horse power; Rochester & Pittsburgh Coal & Iron Company, for development at Punxsutawney, Pa., 5,000 horse power; Upson Nut Company, for installation in the new mill being erected in Cleveland, O.; Youngstown Sheet & Tube Company, for installation at the new blast furnaces being built at Youngstown, O.

Hoists for McKees Rocks Plant.

Since the resumption of operations at the Pressed Steel Car Company's plant, McKees Rocks, the company has asked for estimates on the installation of electric hoists and other additional equipment.

NEW EQUIPMENT WANTED.

New Plant at Queen Junction.

The S. H. McRoberts Boiler & Tank Company, with offices in the Commonwealth building, Pittsburgh, and works at Mars, Pa., is asking for estimates on the erection of a new plant to be built at Queen Junction, Pa.

The new plant will consist of two steel frame buildings, one of which will be 160x48 feet and 45 feet high and the other 160x40 feet and 41 feet high. Estimates are also being asked for a 75-horse power steam engine, an air compressor with a capacity of 520 feet of air per minute at a pressure of 100 pounds and other equipment.

When the buildings are erected the company will move the machinery from Mars to the new plant. The company manufactures car tanks, storage tanks, oil refinery work, boilers and self-supporting steel stacks.

Air Compressors for River Work.

Major H. C. Newcomer, United States engineer, Farmers Bank building, Pittsburgh, will receive estimates to September 15, for two air compressors with capacity of 300 cubic feet per minute each at 100 pounds pressure, with 100 pounds steam pressure and not over 125 revolutions per minute. The compressors are to be installed for the operation of machinery at Lock No. 1, Monongahela river, Pittsburgh.

For New Rolling Mill.

J. William Barnes, of Houston, Tex., formerly of Homestead, Pa., was in Pittsburgh last week securing estimates on the cost of equipment for a rolling mill to be erected at Houston. Mr. Barnes represents the Penn City Steel Company, which has been organized for the purpose of building a plant in which bars, angles and other shapes will be rolled from old rails.

Electric Cranes Wanted.

The Scott Iron & Steel Company, Carnegie, Pa., is asking for estimates on two electric cranes, one of 15 tons and the other of 25 tons capacity. The cranes are to be erected on 50-foot spans and to be wound for 220 volts, direct current.

For Conveyor Outfits.

Among the recent orders received by the Philadelphia plant of the Link-Belt Company are the following:

New York—Link-Belt adjustable chutes for dock company, bituminous coal handling machinery for oil-cloth works, open top carrier for contracting company, apron feeder for alkali company, barrel elevator for oil company.

New Jersey—Bituminous coal handling

machinery for foundry, V-bucket elevators for brick company, chalk handling machinery and roll cloth elevator for oil cloth company, apron conveyor for paper company, screw conveyor for zinc company.

Export—Flight conveyors, bagasse feeders, juice strainers, trash elevators and conveyors and other miscellaneous sugar handling machinery for sugar companies in Cuba.

Rhode Island—Coal and coke handling machinery for retort house.

Delaware—Machinery for handling crushed limestone, conveying machinery for railroad company.

New Hampshire—Link-Belt shallow trough belt conveyors for manufacturing company.

Florida—Flint-rim sprocket wheels and miscellaneous conveying machinery for handling phosphate rock for phosphate mining companies, machinery for digging clams.

Pennsylvania—Link-Belt shallow trough belt conveyors for wood refuse conveyor for manufacturing company, coal and ash handling machinery in large office building, yarn elevator for manufacturing company, industrial track system and cars for contracting company, car haulage equipment for coke company, retail coal pocket outfit, foundry coke handling machinery, boiler house equipment, including Berquist bin, sand elevator and creamery, screw and flight conveyors for cement company, miscellaneous coal handling machinery for large works, steel towers for electric light company.

Massachusetts—Dry and wet straw conveyors, paper elevator, box handling machinery for ink company, monobar flight conveyor for electric light company.

Illinois—Shot elevator for amusement enterprise.

Washington, D. C.—Conveying machinery for powder house for United States Government.

Extension at Sharon.

Extensions which will represent an expenditure of about \$100,000 are being made at the Driggs-Seabury Ordnance Corporation's plant at Sharon, Pa. The company is constructing additions to the machine shop and assembling room which will greatly increase the output. Eventually the company will be making its own automobiles. The output of the plant has been increased 20 per cent in the last few months.

Iron Trade Review's Daily Issue.

The Iron Trade Review on September 7, began the issue from its Cleveland office of a tabloid daily edition, which is being received with favor in the iron and steel trade. The new daily venture is attractively made up, and endeavors to cover the field in concise bulletin form.

The American Lead Company, manufacturers of lead pipe and special shapes, has erected a new steel frame building at 3118 Penn avenue, Pittsburgh, and is installing machinery for increasing its production.

PIG IRON PRODUCTION FOR AUGUST; STEEL COMPANIES MAKE NEW RECORD

The pig iron production for the month of August, as totalled by The Industrial World by districts, shows a total production of merchant and steel-making irons for the month of 2,246,480 tons. The record in the industry is still held by October, 1907, with 2,336,972 tons. The July record this year was 2,094,097. There were 278 furnaces in blast September 1, a gain of 18 in the month, and the weekly capacity in blast at the opening of the month was 525,037 tons,

as against 488,742 tons on August 1.

The steel making companies, however, made a new high record for the month, with an output of 1,591,990 gross tons of steel-making iron, the highest previous record made by the steel companies being 1,514,521 tons in October, 1907. The August production of the United States Steel Corporation was 1,102,288 tons. The Industrial World's table shows the following totals for August by districts:

	No. Stacks.	In Blast.	Out Blast.	Production.
New York	23	19	4	173,317
New Jersey	10	4	6	22,765
Pennsylvania, Eastern	61	38	23	161,425
Pennsylvania, Western	27	18	9	118,174
Pittsburgh District	50	47	3	538,294
Shenango Valley	20	17	3	143,722
Mahoning Valley	20	17	3	207,887
Ohio, Central and Northern	22	18	4	153,797
Ohio, Hocking and Hanging Rock	15	8	7	26,804
Wheeling District	14	12	2	125,281
Maryland, Virginia and Kentucky	32	15	17	67,752
Alabama	46	22	24	139,231
Tennessee, Georgia and Texas	21	9	12	23,483
Illinois, Minnesota, Wisconsin, Missouri, Michigan, Colorado and Indiana	45	34	11	344,648
	406	278	128	2,246,480

STANDARD STEEL CAR

Report of Further Preparations for Extensions This Year.

Besides the new steel plant now under construction at Butler by the Standard Steel Car Company, preparations evidently are being made for extensive additions to the Steel Car Forge Company's plant at Ellwood City, which is operated by the same corporation.

Property has been purchased by the company directly adjoining its Ellwood City works. Early this summer announcement was made that the property of the Peerless Glass Company, containing about seven acres, and the land of the old Ellwood stove foundry had been purchased for \$13,000. Recently C. A. Martin, general manager of the concern, appeared before the Ellwood City council and asked that a street be vacated, explaining that the site was badly needed by the company for the building of large additions. At the office of the Standard Company in Pittsburgh, it was admitted that the property had been purchased to make room for extensions, but it was said plans for the improvements were not yet ready to be announced.

The Standard Company completed arrangements during the week for the taking over of the plant of the Middletown

Car Company, Middletown, Pa. The Standard Steel Car Company contemplates the rearranging of the machinery at Middletown for the building of steel cars as carried on at its other plants. The new works will have a capacity of about 20 steel cars per day. This acquisition gives the company control of four plants, which are located at Butler, New Castle and Middletown, Pa., and Hammond, Ind., having a total capacity of about 250 steel cars per day. The Hammond plant will begin operations shortly. The contract for heating the shops there was recently given to H. L. Winslow Company, Chicago.

Foundrymen to Meet.

The members of the Pittsburgh Foundrymen's Association will hold the first of a series of meetings at the Fort Pitt hotel, Pittsburgh, Monday evening September 13, at 7:00 o'clock. The Hon. James Francis Burke will be the speaker of the evening. He will discuss "The New Tariff and Its Effect on Foundry material."

Cincinnati.—August Fenger & Company storage and grain warehouse and elevators destroyed September 2; loss \$22,500. Building owned by Southern Grain Company, Knoxville, Tenn.

New High Mark for August in Lake Ore; Tonnage for Month Over Seven Million

MOVEMENT ENDING AUGUST 31, WAS NEARLY HALF A MILLION TONS HEAVIER THAN DURING MONTH PROCEEDING, AND 50 PER CENT GREATER THAN FOR AUGUST OF LAST YEAR.

The lake ore movement during August established a record, exceeding 7,000,000 tons for the first time in the history of the business. The figures for the shipments for August show a total ore movement for the month of 7,193,199 tons. This is an increase of 2,443,544 tons, or 51.45 per cent over shipment for the same month last year.

The total ore movement so far this year, or from the opening of lake navigation to September 1, reached 22,588,549 tons. This was an increase of 10,603,613 tons, or 88.48 per cent over the same period last year.

This is 1,753,000 tons less than the record-breaking movement of 1907 for the same months, and lake interests are promising that the 1907 record will be broken by the end of the year.

The Government reports for July show the ore movement for that month to have been 6,727,664 gross tons.

Lake Superior Prices to Advance.

Advices from Cleveland state that it is practically assured, by reason of the latest developments in the Eastern ore situation, that the merchant producers of Lake Superior iron ore will make an advance of 50 cents a ton all around for the season of 1910, thereby restoring the 1907 price level, which was the highest since 1900.

No formal conferences have been held and it is improbable that any definite announcement will be made much before the close of the year. Usually the merchant ore firms have preferred not to make an announcement until consumers were ready to buy and sometimes that has delayed the matter until well into the new year, but with so many of the ore firms interested in pig iron, an early announcement is favored in some quarters, owing to the strengthening effect it would have upon the pig iron market.

As soon as the revival in tonnage and prices in the iron and steel trade had gained headway some ore interests began to favor an advance for next season but the situation could not be canvassed thoroughly on account of the tariff uncertainties and the position of foreign ore. Recent developments have made it plain that the Eastern market is practically lost to the Lake Superior ore

trade, except for such ore as is needed for admixture and in which price does not cut such an important figure. The reduction in duty has had an effect in fixing the position, but only a slight one, as the reduction was only from 40 cents to 15 cents, or 25 cents a ton, while Lake Superior ores frequently fluctuate 50 cents or \$1 from one season to the next, and 1907 prices were \$2 a ton above 1904 prices.

The lake ore firms have kept close tab on the movement in foreign ore. Large purchases of Spanish and Swedish ore were made by Eastern merchant furnaces in July and August, while the latest information is that 250,000 tons of Newfoundland ore has been sold. This is the same ore as is used by the Dominion Iron & Steel Company in its blast furnaces at Sidney, Nova Scotia, and comes from Great Bell Island, in Concepcion Bay, Newfoundland.

With the Eastern ore demand practically lost the Lake Superior ore interests can lose nothing in the East by an advance in price, while on account of the heavy freight there is no possibility of imported ore crossing the Allegheny Mountains. Furnaces have complained of advanced in Lake Superior ore on account of the competition of Southern iron, but the ore interests claim no such argument can be used at present since Southern iron has advanced to \$14, Birmingham, for next year's delivery, or more than \$3 a ton from the low point, equal to \$1.50 on ore.

The American Metal Market's reports show these ranges of prices on Lake Superior ores, at Lake Erie dock:

	Old Range		Mesabi.	
	Bes.	Non-Bes.	Bes.	Non-Bes.
1904	3.00	2.60	2.75	2.35
1905	3.75	3.20	3.50	3.00
1906	4.25	3.70	4.00	3.50
1907	5.00	4.20	4.75	4.00
1908	4.50	3.70	4.25	3.50

Base ore content (natural state) 1906 and preceding years: Bessemer, 56.70; non-Bessemer, 52.80; 1907 and later: Bessemer, 55.00; non-Bessemer, 51.50.

Oliver Interests in New Territory.

The Oliver Iron Mining Company is preparing to do extensive work in the Baraboo, Wis., district. Plans have been perfected for the erection of a steel shafthouse, and other buildings, to cost \$250,000. It is expected that practically all of the ore that the company will produce in the district will go to the Gary plant. A number of early operators in the Baraboo field were balked by the heavy flow of water in the workings. In order to overcome this, the Oliver

company is to install a fine pumping equipment. It is also planned to install an electric plant, with a view to operating the underground system with electric power, as well as lighting the workings.

IRON ORE PRODUCTION.

Figures for 1908 Show Severe Decline from 1907 Totals.

The annual report by the United States Geological Survey on the production of iron ore has just been sent to the printer and will be issued soon as an advance chapter from "Mineral Resources of the United States, calendar year 1908." The subjoined table, extracted from this report, shows the total production by States.

As prophesied in the report for 1907, the production for 1908 showed a very severe decline, the total decreasing, in fact, almost to the production of 1904, when the remarkable increase began which characterized the industry for three years. The total quantity produced in 1908 was 35,983,336 long tons, valued at \$81,845,904, as compared with 51,720,619 long tons, valued at \$131,996,147, in 1907. Practically every important producing State shared in the great decrease, and the same is true of all the important varieties of iron ores.

Production of iron ore, by States, in 1908:

State.	Quantity (long tons)	Value
Alabama	3,734,438	\$ 4,358,902
Georgia	321,060	540,189
Michigan	8,839,199	25,150,861
Minnesota	18,652,220	42,313,974
Missouri	98,414	218,182
New Jersey	394,767	1,162,474
New York	697,473	2,098,247
North Carolina ..	48,522	76,877
Ohio	26,585	36,736
Pennsylvania	443,161	572,346
Tennessee	653,343	876,007
Texas	55,066	30,663
Virginia	692,223	1,465,691
Wisconsin	733,993	2,027,208
Colorado	528,625	727,192
Montana		
Nevada		
New Mexico		
Utah		
Washington	28,112	105,457
Wyoming		
Connecticut		
Massachusetts		
Kentucky		
Maryland	53,235	84,898
West Virginia		
	35,983,336	\$81,845,904

The Cutler-Hammer Manufacturing Company, Milwaukee, controlling the Cutler-Hammer Clutch Company, is advertising extensively its lifting magnets for heavy mill work. The company has issued an interesting booklet on magnets, magnetic clutches and separators. A full page ad. of the company's magnetic product appears in this issue of the Industrial World.

GATHER IN COAL LAND.**Midland Steel Company Takes Options on a Convenient Tract.**

The Midland Steel Company, of Midland, Beaver county, has closed the negotiations with the owners of the property on the south side of the Ohio river in Beaver county for the options of 4,000 acres of coal lands and the indications are that the company will develop the field.

For some time the steel company has been experimenting with the coal and has taken up the options with the intention of drilling test holes. The coal has been tested for coking purposes and has been found to be satisfactory chemically.

The diamond drilling is to be done this fall as early as it can be conveniently arranged and if it proves satisfactory the chances are that the company will complete the purchase in the near future.

The tract is directly across the river from the site of the Midland plant, and the transportation item could be economically worked out.

U. S. Steel Gets Coal Land.

The final transfer was made September 1 by which the Steel Corporation took over the coal property on which it held an option from the Hammond Company, and whose value is several million dollars. The original option expired August 1, but was extended to September 1. The larger part of the property is what has been known as the Kelley mines and lands in the Danville, Ill., district, which a few years ago were sold for \$3,000,000.

The Hammond Company was promoted by R. R. Hammond, formerly manager of the Chicago & Illinois road and organizer of the Dering Merger Company a few years ago.

New Steel Scaffolding Plant.

It was announced at Evansville, Ind., September 2, that the International Steel and Iron Construction Company will erect a large plant in that city which will have a floor space of 94,000 feet to manufacture steel scaffolding for use in the building of skyscrapers. George Bannabarger, formerly of the Superior Scaffolding Company, of St. Louis, will have charge of the new plant.

Work on New York Barge Canal.

Reports filed at Albany show that work costing more than \$12,000,000 has been accomplished on the New York barge canal. Two new contracts have been added, increasing the total work under contract to more than \$40,000,000. More than 38,500 cubic yards of material were removed by the big excavators.

INDUSTRIAL FIRES.

Greenville, Pa.—Car cleaning department of Bessemer & Lake Erie car repair shops destroyed September 7; loss \$10,000.

* * *

Reading Pa.—The plant of the Priser Painter Stove Company was destroyed by fire September 6. The loss was about \$40,000.

* * *

Lancaster, Pa.—Two warehouses and reserve hardware stock of Reilly Bros. & Raub destroyed September 5. Loss \$60,000.

* * *

Tacoma, Wash.—Fire at the Tacoma Smelting Company caused a damage of \$1,000. Part of the roof of the copper works was destroyed.

* * *

Pittsburgh.—Shops of Synnestvedt Machine Company, makers of cotton picking machines, practically destroyed September 9; loss \$20,000.

* * *

New York.—Repair shops of Union Railway Company, in the Bronx, destroyed September 2, with 50 traction cars ready for fall service; loss \$200,000.

* * *

Pittsburgh.—Plant of Railway Steel Spring Company, Twenty-fifth and Smallman streets, badly damaged September 8; machine shop destroyed; less \$50,000.

* * *

New Orleans, La.—Plant of the Southern Spring Mattress Company, at No. 17 Decatur street, destroyed August 28. Stock was valued at \$5,000. Insured in the Aetna.

* * *

Somerset, Pa.—The fire of August 21 at plant of Somerset Door & Column Company destroyed all buildings and machinery. Loss \$40,000 to \$65,000; insurance \$15,500. Will rebuild at once and will refit mill with all new machinery. Will be in shape to operate in from three to four months.

Government Wants Barges.

At the office of the U. S. Engineer, Vicksburg, Miss., sealed proposals for constructing and delivering steel barges will be received until October 6, and then publicly opened; information on application; Clarke S. Smith, Captain, Engineers.

Cape Breton Plants Rushed.

President J. H. Plummer is quoted in the Boston Financial News as saying that the business of the Dominion Iron & Steel Company is now at a point where the demand exceeds the capacity of the plant and that extensions are being pushed rapidly.

FREIGHT RATE DISPUTES.**St. Louis Furnace Company Complains.**

Alleging discrimination against St. Louis and in favor of Chicago, Detroit and Toledo in freight rates on coke from West Virginia ovens, the St. Louis Blast Furnace Company has filed complaint with the Interstate Commerce Commission at Washington, asking for an order correcting the alleged abuse and allowing it reparation for overcharge. The defendant railroads are the Virginia Railway Company, the Chesapeake and Ohio, the Southern and the St. Louis, Iron Mountain and Southern.

The St. Louis concern's plant is located on the Iron Mountain tracks at Soper street. It had a contract with the Smokeless Fuel Company of Cincinnati agent for the Loud Creek Colliery Company of West Virginia, covering its requirements for shipment to its furnace plant in St. Louis from coke ovens at Page, W. Va. In those months it is alleged the defendant railroads charged on the basis of the through rate of \$2.80 per net ton of 2,000 pounds from Page, on the Virginian Railway, to St. Louis.

The discrimination alleged is that these railroads have been and now are publishing dual rates on coke to the other Middle Western cities named, where are located other furnaces whose product comes in competition with the St. Louis Blast Furnace Company's pig iron. The furnace companies of Chicago, Detroit and Toledo, it is charged, get their coke from the same source 30 to 50 cents lower. The overcharge for which reparation is demanded is \$1,695.

Joint Committee Waits.

Members of the joint committee on rates on iron and steel articles, of the Central Freight and Trunk Line associations, had a conference September 2 and decided to take no definite action pending such recommendations as may hereafter be received from the Buffalo freight committee.

Equalizing Coal Tariffs.

Effective September 5 the rate of coal shipments in carload lot over the Southern and the Alabama & Vicksburg from Alabama points to Jackson, Miss., was reduced 15 cents per ton placing Alabama and Kentucky mines on a parity.

Pennsy Reports Fewer Idle Cars.

Reports from Philadelphia say there were 24,000 idle cars on the Pennsylvania system on September 1 and the tendency is to a further increase of cars in service. When the depression was at its height the number was 90,000.

No Arbitration in Sheet Mill Strike; Strikers Enjoined; Plants Resuming

SHEET AND TIN PLATE WORKERS RETURN TO OPEN SHOP MILLS—SWEEPING COURT ORDER IS ISSUED AT YOUNGSTOWN, O.

After successfully starting its principal tin plate plants at Sharon, New Castle and Elwood, Ind., in the face of the strike of the union tin mill workers, the American Sheet & Tin Plate Company last week turned its attention to increasing its sheet mill capacity.

It was announced that all the sheet workers needed were available to take care of the increased capacity desired. The announcement was made from Columbus, O., by Joseph Bishop, secretary of the State board of arbitration that the board would take no part in the strike situation in the sheet mills at Struthers and Youngstown, because no opportunity had been given it, or in all probability would be given it to take any part. Secretary Bishop returned from Pittsburgh, where he attended a meeting of the labor commissioners and boards of arbitration of two States on the strike situation in the mills, combine and independent. In this meeting the labor commissioner of Pennsylvania took no part. The meeting came to naught, as there is nothing to arbitrate so long as the company and men refuse to negotiate. The question at issue is almost wholly that of the open shop.

The Youngstown Sheet & Tube Company announced during the week that the strike at its plant was entirely broken. The last of the six mills in the sheet department was placed in operation on September 7 and the entire department is now working full. The claim is also made that in the process of reorganizing the company has secured a first class force of men.

On September 7, in the most sweeping and far-reaching injunction ever handed down in the State of Ohio against organized labor and the conduct of strikes on the lock-out principle, Common Pleas Judge George F. Robinson, sitting at Youngstown, granted to the American Sheet & Tin Plate Company, a restraining order against the strikers at the Struthers sheet mill.

The injunction denies the striking workmen the right to picket the Struthers mill longer; it refuses them the right to congregate in groups in the highways leading to the plant at Struthers; from gathering at the railroad and street car stations there; from molesting or interfering in any way with the officers and employees of the company, or from inter-

fering in any way with men about to enter the employ of the company. In addition to enjoining the members of the two Amalgamated lodges from doing any physical violence to any one connected with the plant, this portion of the order extends even so far as to protect the proprietors of the boarding houses in Youngstown where the strike-breakers have been living.

In the petition especial emphasis is laid upon the fact that the strikers have been armed with clubs, knuckles, black-jacks and other deadly weapons and upon the claim that they have shot at and fired upon employees of the company with revolvers and firearms.

The company further claims that the lodges of the Amalgamated Association are guilty of conspiracy to hinder it from securing the services of a sufficient number of men to handle its contracts; the fact that the lodges have headquarters where plans for the picketing of the plants, etc., are matured is mentioned in the petition; the company claims that its employees have been put in fear and will not return to their work and that they refuse to work for the plaintiff.

The injunction as prayed for and which was granted in whole by Judge Robinson against all members of the Warner and Acorn lodges of the Amalgamated Association asked the following restraining orders:

That they may be restrained and enjoined by the court, pending final trial, from entering the grounds of the plaintiff's plant in Struthers; that each of said defendants be enjoined from in any manner molesting or interfering with any of the property of this plaintiff and from molesting, threatening or in any way hindering any of the employees, officers or agents of the plaintiff in discharging their duties to the plaintiff, or any person, and from hindering or molesting any of the plaintiff's employees or any persons who is about to become its employee from going to and from its works; that the said defendants and each of them be restrained and enjoined from assembling and collecting around the railroad stations or street car stops in said village of Struthers, or city of Youngstown, and other places for the purpose of intimidating the employees of said plaintiff and from in any manner individually or collectively threatening, assaulting or putting in fear or interfering with any person employed by the plaintiff or about to be employed by it while going to and from said stations or cars or any of them.

That the defendants, each and all of them, be restrained and enjoined from gathering at any time upon the streets or highways leading to plaintiff's plant or at any point in said county for the purpose of preventing, intimidating or interfering by threats, or otherwise, with

the free access of the persons in the employ of the plaintiff or seeking to enter its employment, or going to or from their houses or boarding houses, and from going to the boarding houses and living places of this plaintiff's employees, and threatening the owners and keepers thereof, and from doing any act that tends to prevent through fear, plaintiff's present employees from working and from hindering and molesting or threatening or assaulting any person so employed or about to enter plaintiff's employment at any time or place; that the defendants and each of them be restrained and enjoined from any acts which interfere or tend to interfere with the plaintiff in the conduct of its business, and the employment of men therefor.

That the defendants be restrained and enjoined from picketing the plaintiff's said plant and from maintaining pickets upon the streets or highways leading thereto; or about the stations or car stops, with a view of intimidating or threatening persons working for plaintiff or about to enter its employment, and that they be restrained and enjoined from gathering and collecting in groups and large numbers upon the streets for the purpose of intimidating and putting in fear plaintiff's employees, and from threatening or physically molesting plaintiff's agents, officers or employees and calling them "Scabs" and vile names, and from doing any and all acts calculated to put in fear plaintiff's employees to induce them or compel them to leave its employment and from inciting, inducing or persuading others from doing any of the acts and things aforesaid, from the doing of which they themselves are enjoined, and that upon final trial said injunction be made permanent.

During the week the tin mill management at Sharon succeeded in placing all its strike-breakers in hotels and boarding houses, and the mill commissary was abandoned. Fourteen hot mills out of 20 at the Sharon plant are in operation.

The American Sheet & Tin Plate Company at the end of the week had a total of 150 hot tin mills in operation out of 221 serviceable mills. In other words, 68 per cent of the serviceable tin mill capacity and 80 per cent of the serviceable sheet mill capacity were in full operation. In the tin mill plants 17 out of 28 mills at the American Works at Ellwood, Ind., were running. The New Castle Works, at New Castle, Pa., has 14 out of 20 mills running. The Shenango Works at New Castle has 15 out of 30 mills running. Other smaller tin plate plants are on full capacity.

PERSONALS.

Robert Bentley, president of the Ohio Iron & Steel Company, Youngstown, O., who with his family has been touring Europe several months, has returned.

W. Owen Davis, division freight agent of the American Steel & Wire Company, with headquarters at Pittsburgh, has been transferred to Chicago.

E. E. Knox, Pittsburgh representative

of the Bury Compressor Company, Erie, Pa., has opened an office in the Empire building.

Collingwood & Rothwell, Columbia Bank building, Pittsburgh, have been appointed agents for the Kerr Turbine Company, Wellsville, N. Y. The company manufactures steam turbines from 5 to 1,000 horse power.

Frederick F. Fischer formerly with the Fischer Foundry & Machine Company, Pittsburgh, has succeeded George Webb as Pittsburgh representative of the Du Bois Iron Works, with offices in the Park building. Mr. Webb has been transferred to New York.

B. L. Verner, who has been assistant purchasing agent for the Republic Iron & Steel Company, with offices in Chicago, has resigned, and has been appointed sales manager for the Blue Island Car & Equipment Company, Chicago.

James D. Dyer, formerly salesman with the United Iron & Steel Company, and Frank T. Moorhead of Moorhead Bro. & Company, Inc., of Pittsburgh, have formed partnership under the firm name of James D. Dyer & Company, 604 Peoples Bank building, Pittsburgh, to deal in pig iron, coke, etc.

Charles C. Henderson has been appointed general manager of works of the Allegheny Steel Company, Pittsburgh, whose plants are at Brackenridge, Pa. This company recently took over the Reliance Tube Company, of which Mr. Henderson at that time was treasurer and general manager.

Texas has wisely reestablished the bureau of geology which was suspended a few years ago due to the parsimony of a former legislature. Dr. W. N. B. Phillips former editor of the *Industrial World*, been recalled to head the work. Texas recently tried to enact a law similar to the Mexican law covering the disposition and regulation of its vast public mineral lands but the law failed owing to adverse influences.

H. S. White, James W. Downer and John Duncan, each with the title of assistant general manager of sales of the National Tube Company, Frick building, Pittsburgh, have resigned. John J. Kennedy, formerly credit manager of the company has been made general manager of sales, and David H. Ramsbottom has been appointed assistant general manager of sales. E. G. Benson has been appointed credit manager, succeeding John J. Kennedy. All these resignations and appointments became effective September 4.

OBITUARY.

WILLIAM HENRY SINGER.

One of the most revered of the "old guard" of Pittsburgh steel makers, William Henry Singer, died September 4, at his summer home in Watch Hill, R. I. Mr. Singer's death was due to injuries he received in an automobile accident while riding with his son-in-law and daughter, Dr. and Mrs. Robert Milligan, near Matinuck, 10 days before.

William Henry Singer was born on October 2, 1835, in Third avenue, Pittsburgh, opposite the site of the old Western University of Pennsylvania, now University of Pittsburgh. He was the son of George and Elizabeth Singer, both of whom came to Pittsburgh from Westmoreland county, where the Singer family had been prominent for a number of years.

He was educated in the public schools of Pittsburgh and in the Western University. He first became a clerk for Wallingford & Company, forwarding commission merchants, and later was given a clerkship with the famous old iron manufacturing firm known as G. & J. H. Shoenberger & Company, and by faithful service became in a few years one of the members of the firm.

In 1860 Mr. Singer turned his attention to steel, making that a specialty, and organized the firm of Singer, Nimick & Company. He remained at the head of that company until it was absorbed in 1900, when the Crucible Steel Company of America was formed. He served as director of that company until his death. The only other directorship which Mr. Singer held was with the Carnegie Steel Company.

Mr. Singer was one of the organizers of the Pittsburgh Bessemer Steel Company, which built the Homestead steel works, and was president of the company when it was bought by Andrew Carnegie.

In 1859 Mr. Singer married Hester Harton, of a well-known Pittsburgh family. Of this union four children survive: George Harton Singer, Mrs. Ross Proctor, of New York; Mrs. Marguerite Milligan, wife of Dr. Robert Milligan and William Henry Singer, Jr.

CHARLES PORTER STEVENSON.

One of the prominent founders of Northern New York, Charles Porter Stevenson, president of the Eastman Machine Company, of Buffalo, died at his home in that city, September 1, following an illness of about one year's duration. Mr. Stevenson was best known in the oil country through his activities as a member of the Bradford Oil Exchange during the height of spec-

ulation in pipe line certificates. He was born in Alexandria, Pa., and in his youth engaged in railroad work for a time. He removed to Bradford, Pa., during the first excitement there and engaged in the oil business in several of its branches. In 1892, following the decadence of the speculative end of the oil business, he went to Buffalo, where he founded the Eastman Machine Company and engaged in other business enterprises there, including the Western Inspection Company, of which he was president at the time of his death. In 1879 Mr. Stevenson married Louise G. Wade, of Pittsburgh, and Mrs. Stevenson survives, with three sons, Charles Royal, Geoffrey and Wade Stevenson, of Buffalo.

CAPT. WILLIAM H. MCKINLEY.

Captain William H. McKinley, aged 62, a pioneer riverman of Pittsburgh, and senior member of the McKinley Coal Company, Pittsburgh, died of apoplexy September 6, at his home in Ludlow, Ky., where he and his family had moved last May. Captain McKinley was born in Brownsville, Pa., and when a boy assisted his father, Robert McKinley, who died but three weeks ago, in shipping coal from the mines on the upper Monongahela river to the Gulf. When a young man Captain McKinley organized the McKinley Coal Company. In 1899, when the McKinley Coal Company was merged into the Monongahela River Consolidated Coal & Coke Company, Captain McKinley transferred his business interests to Cincinnati, where he was interested in the Independent Coal Company and the Queen City Sand Company. His widow survives him, with two sons, Ernest H., superintendent of transportation of the Monongahela River Consolidated Coal & Coke Company, and Harry S. McKinley, an attorney at the Allegheny county bar.

GEORGE L. FISCHER.

George L. Fischer, for many years head of the Fischer Foundry & Machine Company, Pittsburgh, and one of the best known foundrymen in Western Pennsylvania, died September 5, after a short illness. Mr. Fischer was born in Cassel, Germany, October 28, 1839, and came to this country in 1852. He located on the Southside, Pittsburgh. In 1867 he organized the firm of Fischer, Wenzel & Company, which later became Fischer, Thomas & Company. In 1885 he bought out his partners and established the Fischer Foundry & Machine Company, from which he retired in 1901. His widow, Mrs. Matilda Wiese Fischer, a daughter, Eva Marie Fischer, and five sons, Louis G., Harry B., Fred F., George L. Jr., and Albert Fischer, and nine grandchildren survive.

LIDGERWOOD HOIST AT CORNWALL WALL ORE BANK.

A NEW hoisting, crushing and ore handling arrangement has been installed at the Cornwall ore mine near Lebanon, Pa., which is intended to cheapen the operations owing to the deepening of the mine:

The mine is to be worked in 30-foot benches. The ore is loaded into cars with a 70-ton steam shovel and loaded into 50-ton cars. The lumps are crushed for proper handling in a 60x42 inch crusher, using as a feeder a Mason roller nine feet in diameter. The crusher was designed by E. C. Bacon and is driven by a 150 horsepower motor. After the ore is crushed and screened the material is separated in a space back of the feed roller, in a 100-ton double roller pocket

when working unbalanced, or 20,000 pounds duty on rack drum when working with balanced loads, handling the loads at a speed of 600 feet per minute.

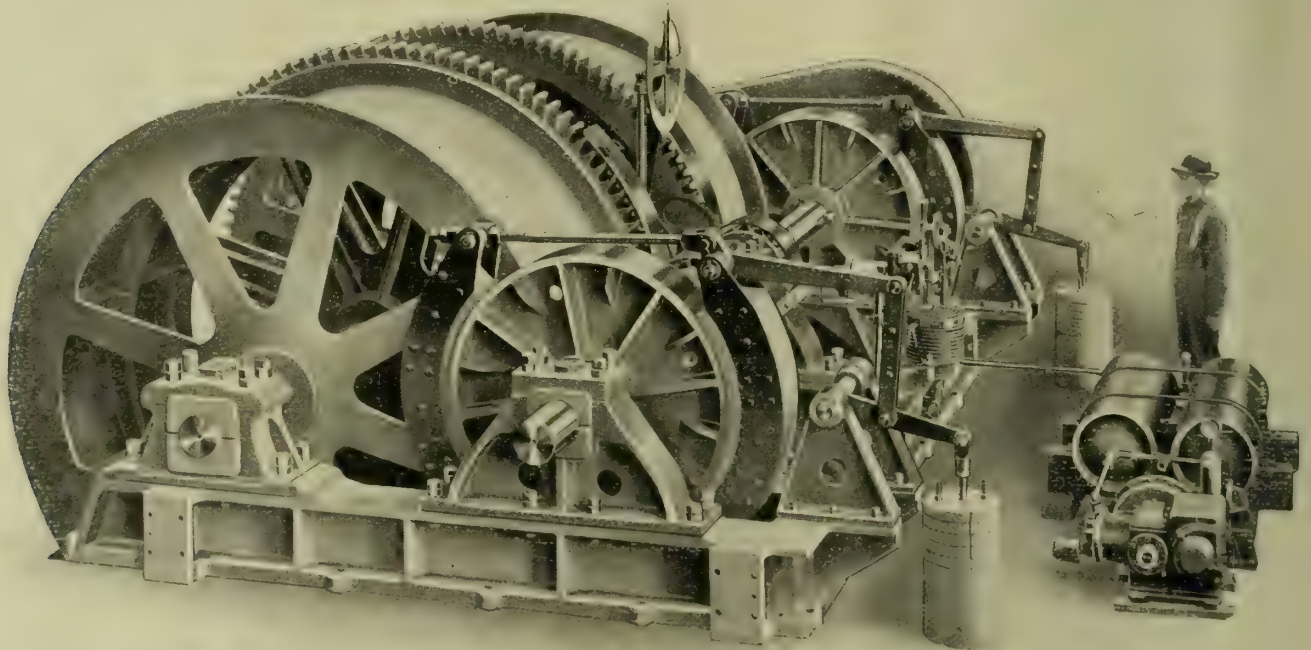
The two drums are each 108 inches in diameter with 52-inch faces. They are grooved for 1½-inch rope and have a capacity of 850 feet each. The drums weigh 20,000 pounds each. The drum shaft is nine inches in diameter. The gears are all of cast steel. Powerful post brakes are provided on each end of the intermediary shaft. These are operated by weights and are controlled by a solenoid magnet through the medium of compressed air. The brake wheels are each 54 inches in diameter, with 12-inch faces.

Compressed air for operating the brakes is ordinarily supplied from the main compressor of the mine, but to

the solenoid to drop, shutting off the air and allows the weights to apply the brakes.

Should the current be cut off by accident instead of by design the result would be the same—the brakes would be applied and the load would be held securely at any point. For further safety against possible accident switches are supplied under the drums, which will automatically cut off the current at once and apply the brakes in case the cables should become slack through breakage or other cause. The brake weights weigh 1,000 pounds each.

The hoist is designed to have two motors, but only one of these was attached when the photograph was made, and this does not show in the illustration. On the side of the frame in the foreground can be seen the two planed faces



Cornwall Ore Bank Hoist, Lidgerwood Manufacturing Company.

which feeds either skip car. The pit pocket, which is 70 feet high, is self contained and can be slid down the foot wall as the depth of the mine increases.

The skips are arranged to travel at a maximum speed of 600 feet per minute on an incline of 45 degrees, with a load of 10 tons. The skips will be arranged for hoisting water in times of flood. The skips will be run unbalanced as long as the mine foot wall continues at an angle of 45 degrees, but when the slope changes to 30 degrees, which will be the case in a number of years, two 500 horsepower motors will be used to operate it, one being installed at present.

The hoist was built and installed by the Lidgerwood Manufacturing Company, of New York. This hoist is designed for a duty of 31,000 pounds lift

guard against any failure from this source, an automatic electric compressor is included in the outfit, and is shown at the righthand side of the illustration.

A dial indicator is provided to show the position of the skips or cars at all times. An electric limit switch is geared to the righthand end of the drum shaft. A master switch is mounted in the center to the rear of the drums.

The operation of the hoist is entirely automatic. When the current is turned on it at once affects the controlling solenoid, which opens a cock, admitting air to release the brakes. At the same time the current puts into operation the motor of the hoist. The limit switch automatically slows down the hoist as it approaches the end of the haul and then shuts off the current. This allows

where the second motor frame is to be attached. Only one motor would be used at a time. Having two motors is merely a precaution to insure constant readiness for operation.

The motor is of the Westinghouse make. It is rated at 500 horsepower, with a large overload capacity and uses direct current at 500 volts.

The bed plate of the hoist proper, without the motors, measures 18 feet 5 inches by 13 feet, with one motor it measures 29 feet by 13 feet, and with the two motors 39 feet 6 inches by 13 feet.

The countershaft is 8¼ inches in diameter and 24 feet long. The total weight of the hoist without motors is 160,000 pounds.

The skips dump on a head frame, 60 feet above the ground level, into a 175-

ton bin which has at its outlet a Mason squirrel cage roll feeder and another step bar screen, all to pass four lumps. The over size is crushed in two sets of 48x48-inch corrugated rolls, the first being set to 10 inches, the second to four inches, both being driven by a 250 horsepower motor.

The crushed product joins the under four-inch size separated by the bar screen and squirrel cage mentioned, and passes to two 15-foot by 60-inch Allis-Chalmers revolving screens, having 1¼-inch perforated plates.

These two sizes, under 1¼-in and over 1¼-inch, are stored in separate transfer pockets to be taken by the motor transfer car, over the steel viaduct, to the loading pockets, where it is stored ready for railroad shipment.

The loading pocket is a concrete structure, having a capacity of about 2,500 tons of crushed ore; the shipping track passes under and through the bin arches, the cars being loaded by means of Mason rollers, not over two minutes being required for the loading of one car and several cars being loaded at once.

Extending back from the bin is an elevated trestle (40 feet high) from which can be stored 30,000 to 35,000 tons of crushed ore, which can be reclaimed by a steam shovel or a grab-bucket crane operated from a railroad track.

The power for the operation of this plant is generated at Lebanon by three 22x33 inch twin tandem Westinghouse gas engines direct connected to 750-KW, 440-volt, three phase, alternators. These engines operate on coke oven gas which is to be piped from the ovens of the Lackawanna Iron & Steel Company and the Pennsylvania Steel Company, through an "oxide" sulphur purifier, a recording meter, and into a 250,000-cubic-foot gas holder from which it is drawn as needed by the engines. The 440-volt current is passed through step-up transformers to a transmission voltage of 11,000 volts and is wired along the Cornwall Railroad and Cornwall & Lebanon Railroad tracks to the mines, entering the substation on the hillside where it is stepped down to 440 volts for use in the alternating current motors. For use in direct current work there is provided a 500-KW. rotary converter which will supply 500-volt direct current.

The present method cannot be continued for more than 1,000,000 to 1,500,000 tons, owing to the grades, etc. Excess power can be sold to various consumers at a considerable profit, as its cost at the switchboard should not exceed five to six mills per K. W. hour.

The engineering work, in general plan and spirit, was laid out by A. J. Mason, of Hooven & Mason; the electrical ap-

paratus furnished by the Westinghouse Electric & Manufacturing Company; the details, designing and construction, being accomplished by the company's own

engineers on the ground. The whole plant is expected to be in operation during the latter part of the coming summer or early fall.

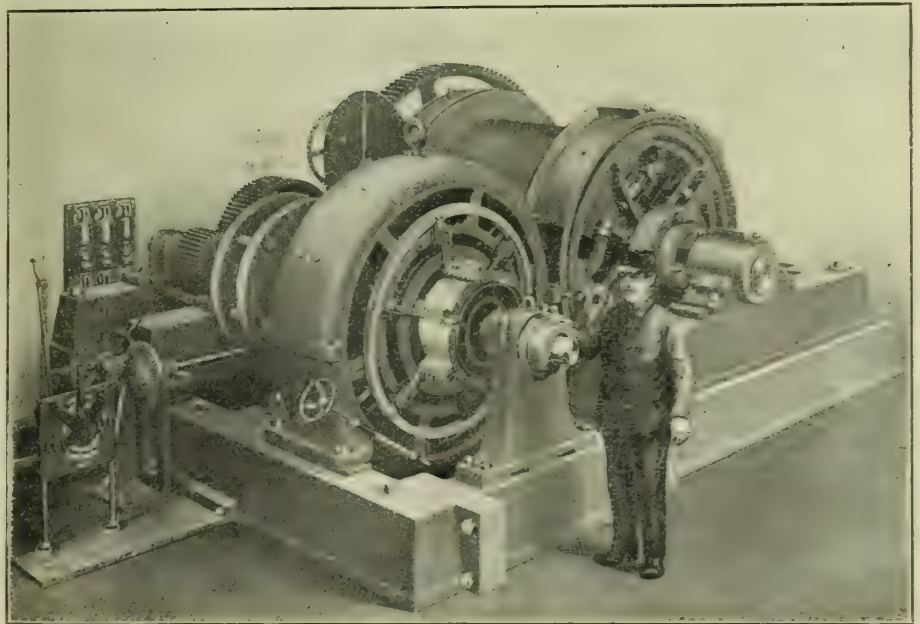
New Power Installation at Dawson, Pa.

There was recently installed in the mine of the Washington Coal & Coke Company at Dawson, Pa., a large mine hoist with an electric motor which prevents several features of considerable interest.

The hoist is used to haul 35 mine cars, averaging 3,800 pounds each when loaded, up a maximum grade of 8½ per cent, 8,000 feet long at a speed of 600 feet per minute. The loaded cars start at the bottom of the slope on a four per cent grade, which gradually increases till the maximum grade of 8½ per cent is

venience in installing in the mine. The drum and large gears and the friction clutch parts are also made in two pieces for the same purpose.

The hoist is driven through a flexible coupling by a 500 horsepower direct-current non-reversing compound-wound Westinghouse motor. It is controlled by a standard semi-automatic Westinghouse magnetically-controlled unit switch controller. These switches are operated from the controller shown in the illustration, the controller carrying only small currents while the main mo-



Westinghouse 500-Horse Power Motor for Mining Hoist at Dawson, Pa.

reached near the top, where the loaded cars are pulled in on a landing on a grade of about six per cent and on a curve of 150 feet radius. The empty cars will be allowed to drift down the slope by gravity controlled by a brake on the hoist drum.

The hoisting drum is six feet in diameter and five feet wide between flanges. It is fitted with a hand brake on one end and a hand operated friction clutch on the other end. The drum is a very heavy steel construction, with a 12-inch shaft. All the gears on the machine are cast steel with machine cut teeth, the main spur gear being 10-inch face and the motor gears 13-inch face.

The frame is made in sections for con-

tor current is handled by the magnetically operated switches, thus doing away with the difficulties from arching.

This controller has an accelerating relay which prevents the starting switches from closing too rapidly and thereby prevents too large starting currents. Thus the second switch cannot close until the current allowed to flow by the closing of the circuit has fallen to a predetermined value. As soon as this value is reached the second switch closes, thereby short circuiting a resistance section and the current rises, but the third switch cannot close until the current has again fallen to the predetermined value. This not only prevents injury to the motor from careless handling during accele-

ration, but also insures the most rapid starting possible.

The controller also has a safety relay which opens the resistance switches in cases of excessive overload, and thereby protects the motor while running. If this relay operates while the motor is running, the motor does not stop but is automatically brought up to its full speed again. This is a particularly valuable feature in an installation of this kind where the cars may strike some obstruction, as it affords perfect protection to the apparatus.

When it is remembered that this hoist is installed some 800 feet below the surface of the ground, the advantages of the electric transmission of power are evident. In no other way could this large amount of power be transmitted as economically nor as easily. The hoist was supplied by the Connellsville Manufacturing & Mine Supply Company.

NATIVE VS. FOREIGN LABOR.

After several years of experimenting with laborers of various nationalities to determine which are productive of the best results, the Amalgamated Copper Company officially announces that it will hereafter employ American labor in preference to foreign whenever it is available.

This step, it is explained, has been taken for business reasons. It means that the service of native laborers, who have a high average of intelligence, is more efficient and profitable than that of illiterate foreigners. The discrimination is mainly against aliens from Southern Europe—Austrians, Slaves and Montenegrins—who, while willing enough to work, are objectionable in a number of ways. They do not make intelligent laborers in the mines and smelters, and do not make very acceptable citizens. They live under unsanitary and immoral conditions, eat cheap and poor foods and are not properly nourished. This, together with the excessive use of intoxicants, dulls their faculties and renders them incapable of the best service.

Workmen from the north of Europe are on a higher plane, physically and intellectually, and most of them have come to this country to make their homes here. These compare more favorably with the so-called Americans, who are largely descendants from the same stocks.

The Southern Europeans hoard their earnings and go back to Europe "rich." They contribute nothing of value to the country or society in which they live.

"That fellow seems to be extravagant."

"Hopeless. He spends his own money just as if it were the government's."

—Louisville Courier Journal.

ENGINEERS' SOCIETY.

Opening Meeting, Season 1909-10.

The opening meeting of the season of 1909-10 of the Engineers' Society of Western Pennsylvania was held by the Structural Section of the society at the headquarters, Fulton building, Pittsburgh, Tuesday evening, September 7, when "Contracts, with Special Relation to Structural Steel Work," was discussed from various points of view by a number of members and members of the legal profession.

J. A. McEwen, engineer with the Pittsburgh Bridge & Iron Works, Rochester, Pa., opened the discussion with a description of the standard contract and other contracts in general used by structural steel companies. He called attention to a number of important features which should be embodied in all contracts, such as the work of the engineer and inspector, the time of the completion of the contract and the provisions to be made for delays, quality of material and terms of payment.

Attorney Watson B. Adair discussed the "Liability of the Contractor for Uncompleted Contracts," showing the advantages of having all features of the work completely covered in the contract with specific clauses as to penalties and bonuses for the completion of the work. The penalties and bonuses should be made reasonable in amount to avoid difficulty in enforcing collection. The contractor, he believed, should give notice of delays caused by acts of omission or commission of others to obtain credit for the delays so caused.

Attorney H. M. Stilley described "Liability for Damages During Construction." He showed the measure in which the contractor, sub-contractor and engineer are liable for damages due to negligence and declared the burden of proof of negligence lies with the damaged party. He also gave a brief description of the Employers' Liability Act.

Attorney S. A. Schreiner discussed "Arbitration of Disputes." He declared arbitration had been recognized and approved by the courts and showed that numerous lengthy legal arguments had been removed from the court calendars by its use. He showed that the average board of arbitration composed of men acquainted with the matters in dispute is generally better equipped to give an equitable decision than the average jury.

O. M. Topp, architect, talked on the "Relation of the Architect to Other Parties to the Contract," and V. R. Covell, engineer, the "Relations of the Engineer to Other Parties in a Contract." Mr. Covell described the duties of the engineer to the contractor and

purchaser and showed that to obtain the best results he must keep continually in touch with shop practice and keep a complete set of notes on all completed work for reference.

Edward Godfrey, engineer, discussed the "Relations of the Inspector to Other Parties in a Contract." Chester B. Albree, of the Chester B. Albree Iron Works, expressed the opinion that a thorough understanding of plans and specifications is all that is necessary to avoid many of the mistakes and disputes which arise during the completion of contracts. Emil Gerber, of the American Bridge Company, and Samuel E. Duff, closed the evening's discussion.

Heavy Engine Purchases.

James T. Castle, Pittsburgh representative of the Buckeye Engine Company, reports the following sales:

Union Drawn Steel Company, Beaver Falls, Pa., 250-horse power engine connected with a 150 K. W. Fort Wayne Electric Company generator. The steel company is also installing a 250-horse power Russell engine connected with a 150 K. W. Western Electric Company generator, and Wickes boilers of 500-horse power capacity.

U. S. Sanitary Manufacturing Company, Monaca, Pa., 250-horse power engine connected with a 150 K. W. generator. This company is building a new cupola and has placed orders for two traveling cranes of five tons capacity.

T. A. Rodefer Glass Company, Bellaire, O., 150-horse power gas engine connected with a 100 K. W. Westinghouse generator.

Driggs-Seabury Ordinance Company, Sharon, Pa., 450-horse power cross compound engine connected with a 300 K. W. Westinghouse generator.

Carnegie Steel Company, for installation in the McCutcheon mills, Northside, Pittsburgh, 1,000-horse power cross compound engine.

W. Harry Brown Coal Company, Brownsville, Pa., 300-horse power engine to be used in driving a mine ventilating fan.

Bridge Plant Operates Double Turn.

The Penn Bridge Company, Beaver Falls, Pa., has arranged to begin operating its plant double turn this week. The company is reported to have orders which will keep the plant in operation steadily until February.

Machine plows of American manufacture were successfully employed last season on the big farms of the Klong Rang-sit district, of Siam. The plows were worked from engines placed on boats on adjacent canals.

Subscribe for the Industrial World.

Boiler Plant of U. S. Agriculture Building Washington, D. C.

The new boiler plant for the Department of Agriculture consists of five 150-H. P. Int. Fired boilers, each with a Morison corrugated furnace, designed for 125 pounds working pressure and arranged in a battery as shown by illustration, also a recent addition of two 100-H. P. T. boilers now being installed and for which Jones Stoker equipment has been purchased. The first mentioned units

The stack is 84 feet high from boiler room floor line, the lower 36 feet being of brick, built square with 24 inch walls. This section of the stack is six feet inside measurement, offset into 60-inch diameter above the breeching connection and lined with fire brick. The upper 48 feet of the stack is of a steel, of self-supporting construction 60 inches inside diameter.

A capacity test of brief duration made on this boiler developed 204.9 H. P. equivalent to 136.3 per cent of the boiler rating.

Those in charge of this plant say that the equipment has proved eminently satisfactory and the use of soft coal in the stokers has enabled the plant to be run economically without creating the nuisance that naturally would ensue in the ordinary use of this character of fuel; the abatement of smoke in fact being practically perfect. This latter feature is of considerable consequence in Washington, because the smoke laws of the district are very rigid in their provisions and strictly enforced.

Panama Canal Supplies.

Sealed proposals in triplicate, will be received at the office of the General purchasing Office of the Isthmian Canal Commission, Washington, D. C., until September 20, 1909, for supplying one steel tugboat. Bids closed on September 8 for supplying a large consignment of pipe and fittings, valves, steam traps, cocks, fiber washers, rail clamps, switches, and other machine shop and track supplies.

To Develop New Patent.

The American Undercurrent Company, of Pittsburgh, has been incorporated in Dover, Del., with a capital stock of \$250,000. The incorporators are O. E. Longsdorf, Paul I. Gundley and M. J. Dain, all of Pittsburgh. The company will manufacture a new underground trolley apparatus which Mr. Longsdorf recently patented. It is the intention of the company to erect a plant to manufacture the article.



Boiler Room U. S. Dep't of Agriculture Bldgs., Washington. (5-150 H. P. Ina. F'd Boilers and Jones Stoker Shown Here)

of this plant now furnish steam for heating the two new laboratory buildings as well as all other buildings on the department grounds, including the greenhouse plant and new shop building at the north end of the grounds, also furnishing all steam used for laboratory purposes, in steam baths, sterilizers, dry rooms, high temperature rooms, etc.

The I. F. boilers are eight feet inside diameter, each containing 80-3-1/2 inch tubes 13 feet long. The Morison suspension furnace installed in each boiler is 50 inch diameter and 12 feet 9 inches long.

All piping, except feed water and bent piping, is standard weight lap welded black iron pipe, tested to 500 pounds pressure per square inch. Bent piping is of extra heavy wrought iron and all feed water piping is of annealed seamless drawn brass tubing of standard wrought iron pipe gauge thickness. The immediate feed connections to boilers are of finished and polished brass.

After the installation of the equipment a short efficiency test was made of one boiler, using bituminous coal from South Fork, Pa., with result as follows:

Average steam pressure.....	116.8 lbs.
Average temperature of feed air.....	73.5 deg.
Dry coal per hour.....	590.7 lbs.
Water evaporated into dry steam F. and A. 212 deg. F. per lb.....	5340.4 lbs.
Equivalent water evaporated per lb. of dry coal F. and A. 212 deg. F.	10.48 lbs.
Equivalent water evaporated per lb. of combustible F. & A. 212 deg. F.	11.1 lbs.
Average H. P. at 34-1/2 lbs., per H. P.....	154.8



The New U. S. Dep't of Agriculture Bldgs., Washington, D. C.

Anderson Reducing Valve for Pipe Lines

The Golden-Anderson Valve Specialty Company, Fulton building, Pittsburgh, has recently perfected and placed on the market a pressure reducing valve for the reduction of pressure in water, steam, air or gas lines. The valve is manufactured in all sizes from 1½ inches up and possesses a number of valuable features. It works without knocking or chattering, is cushioned in all movements and is constructed to withstand high pressure.

In accordance with the sectional view, the spring "B" is adjusted by the bronze sleeve "A" in which it is encased to the required pressure. This spring acts in diaphragm "C" moving auxiliary valve "B," unseating same.

The pressure or inlet side of the valve is at "E." The low pressure or outlet side is at "F." The steam on the high pressure side fills the inlet chamber, exerting a pressure on lower valve "J," also on large piston "K," also passes through port "G" located in piston "K" into chamber "L," and as the spring "B" is holding auxiliary valve "D" open, the steam passes on through ports "M" and "N" to the low pressure side of valve "F." When the pressure on the low side has reached the pressure at which the

valve or spring "B" is set, the pressure still increasing exerts a pressure under the diaphragm "C" which moves upward compressing spring "B" and allowing auxiliary valve "D" to close. The main valves "I" and "J" are forced to their seats by the initial pressure shutting off steam from the system.

In practice the main valves "I" and "J" do not open or close entirely with each variation of pressure, but assume a position which furnishes just the amount of steam required to maintain the reduced pressure desired.

The piston "O" is loosely fitted with packing ring inserted in same, which prevents chattering and acts as a perfect cushion in the closing of the valve, while the large piston "K" acts as a perfect cushion in opening as well as closing. The Golden-Anderson Company has a very complete line of automatic valves for high and low pressure, steam and water service.

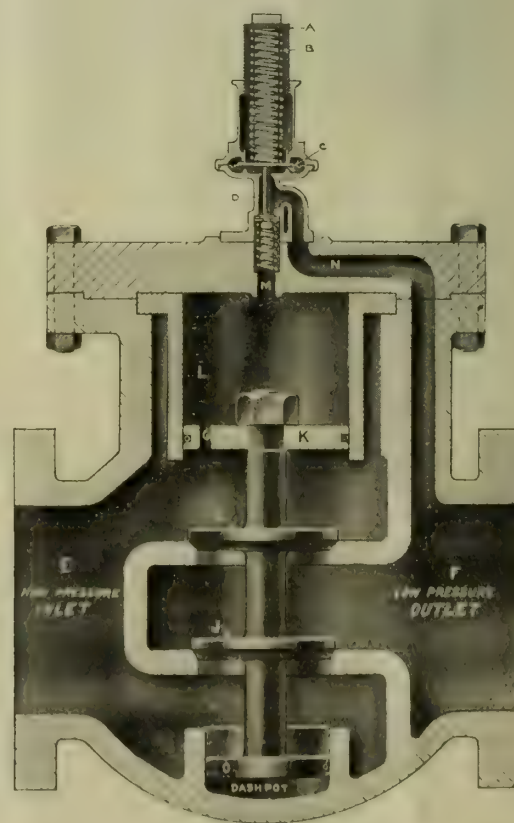
Gas Producer in Double Role.

A Westinghouse bituminous gas producer for supplying fuel to gas engines, as well as furnishing gas for solder baths and enameling kilns, has been installed

by the S. F. Bowser Manufacturing Company maker of oil storage and distributing tanks and automatic weighing pumps, in its modern foundry at Fort Wayne, Ind. This type T Producer plant, of 350 horse power capacity, supplies three 120-horse power tandem horizontal engines, direct-connected to direct-current generators. These furnish power to the shops, which are motor driven throughout. The equipment replaced by the present installation, comprised three 150-horse power Scotch marine boilers, equipped with under-feed stokers; supplying steam to 50-horse power and 125-horse power simple engines. In the shops a large quantity of gasoline was formerly used for melting solder, while coke was required for the enameling kilns. Recognizing the superior economy to be obtained from producer equipment, as well as the advantage of doing away with gasoline and coke in its own special case, the Bowser company decided to install a complete new equipment for gas engines and gas producers. The matter of selecting a bituminous producer was carefully weighed, and members of the firm visited a number of installations throughout the country to study the performance of the types in operation at the present time. The West Virginia coal, 13,000 B. T. U. per pound, used in the producer at present, is delivered at a



The Anderson Reducing Valve



Sectional View of Valve.

cost of \$2.55 per ton. A Greene County Indiana coal, of approximately the same heat value, has been successfully experimented with, and will cost, delivered, \$2.25 per ton. The installation has been under the supervision of Mr. A. A. Bowser, brother of the president of the company.

SOME SUGGESTIONS REGARDING FORMS FOR CONCRETE HIGH-WAY BRIDGES.

F. A. Peterson, Fairmont, Minn.

Read before the Northwest Cement Products Association, Minneapolis, Minn.

Reinforced concrete, for the construction of bridges and culverts, is superior to any other material that has been employed for such purpose. If properly made, it is not affected by storms, winds, or floods, and not subject to decay, rust or distintegration. It requires no paints or protection, no new floors to repair, and is constantly getting stronger and better with age.

The art in concrete bridge designing is its simplicity. There is at this time no form of bridge construction more simple and effective than the straight-beam design. It has the advantage of an unobstructed water-way and is somewhat cheaper than the arch design on account of the cost of forms.

Those contemplating building bridges of concrete should employ a competent engineer to draw the plans. If you undertake that class of work, failure will surely overtake you. Many contractors complain that most engineers were too exacting in their specifications. In most cases they have themselves to thank. If the contractor is honest in his work and is willing to do the right thing, he will soon get the confidence of the engineer and the two will work together in harmony.

The cost of building concrete bridges, compared with steel, will vary somewhat according to location. I believe reinforced concrete bridges for country purposes can compete in price with the combination iron bridges that have been built in the past. The up-keep for the concrete bridges is nothing compared to the painting and repairing of iron bridges.

One of the difficulties to be met with in the construction of concrete bridges is the procuring of suitable labor, and the average carpenter, who has no experience in building forms, is of very little help to you. He does not realize the enormous weight that the timber has to bear and therefore, as a rule, does not build the centering strong enough. By employing a man used to building forms, much lumber will be saved. Usually too many nails are used in the work, causing a loss of time in building and ruining

a large amount of material. No. 7 nails will generally be found large enough. Bracing can be done away with largely by using bolts, and the average man who does the bracing does not do it as it should be done, causing delay and loss. When bolts are used and well greased, they can be readily released at any time.

Before bidding on your job, examine the soil, bore down, and find what foundation you have to contend with. If you find any quicksand you must expect trouble, and your bid must be in accordance with the foundation you find. Insist on having the location and height of bridge to be built staked out so that there will be no question afterward.

Your bid will be governed largely by the distance your gravel and sand will have to be hauled. If your work is over a river, generally a good quality of sand and gravel can be found in pockets, but it is frequently mixed more or less with a large percentage of clay and shale. Be very careful of this material. One engineer declares that a 1:2:4 mix is extravagant, when a 1:3:6 mix will do just as well. This is rather misleading. The writer will admit that if the proper sand and aggregates can be procured, the 1:3:6 mix will do for the footings, abutments and wings, but where one has to procure the material in the country, the 1:2:4 mix is safer to use, on account of the class of material generally found.

Much has been said and written regarding the proper amount of water to be used in concrete, where it is to be poured as is generally the case in bridge building. Concrete made as thick as cream is preferable under general conditions, but the mass should be thoroughly churned with paddles to dispose of the air. There are times and places when one should know when not to use very sloppy concrete. For instance, when filling bridge beams with concrete, where usually a network of reinforcement is used, judgment must be used so that the reinforcement will not hold back the coarse material, and allow the fine to pass to the bottom of the beam, thereby causing an arch under which there is no support, making your concrete uneven in aggregates and consequently weakening it in strength. The foreman should be constantly on the watch for errors of this kind.

The cost of data for form work in bridge building are misleading. The writer believes that there is a greater opportunity for investigation in the construction of centering and form building than in any other branch of concrete work. It is generally estimated that it costs from 40 to 50 per cent of the total cost of concrete in any building for form work. The system known as the "two-board form method" is a great improvement over the old style, and when the forms can be successfully made

of steel, a still greater saving can be made. When your forms are all erected, be careful that your lines are in place and see that your work is measured a second time so that everything is true and in line. In placing your steel, keep strictly to your plans; see that every piece is placed as directed. Too much care cannot be exercised in that branch of the work. Do not neglect wiring, just because it is a little tedious. Have the wire cut about eight inches long before you begin your placing of steel. Number 18 wire is generally used by the writer for wiring rods together. If it is necessary to use stronger wire, just double the Number 18. See that all the steel is placed before pouring concrete. See that all sawdust and dirt are removed before placing steel, and that your lumber is thoroughly wet before concrete is placed.

Tools Needed in Work.

Now a few words about a few of the tools needed: An anvil, a small forge, a few cold chisels, crow bars, sledge hammers, post mauls, a good strong vise, tinner's nips, pliers, wire cutters, several claw pullers, several pieces of steel bars with both ends turned, to be used in taking the forms from the concrete; a few locomotive jacks, in case of forms giving way; grindstone, pipe cutters, stock and dies, taps and dies for bolts.

Nearly all of these you will find are indispensable. Your steel should be ordered the proper lengths from the factory, but the bending will have to be done at the job. Nearly all of it should be bent cold; unless you have an experienced blacksmith there is danger of overburning your steel, thereby weakening your material.

Most of your outside forms can be removed the next day after the concrete has been placed, by wetting the concrete thoroughly. Then apply a 1:2 mix of fine sand, brushing and rubbing down with a carborundum stone. This gives the surface a very smooth and pleasing effect. Last, but not least, see that all plank walks and scaffolding are rigid and strong, preventing any cause for accidents. This one item alone may save you an expensive law-suit.

C. D. Jenks in New Position.

Announcement has been made of the appointment of Charles D. Jenks as western sales manager of the Standard Coupler Company. The western sales office of the company is at 1207 Fisher building, Chicago. Mr. Jenks has been connected with the Pressed Steel Car Company for the past seven years; two years in the operating department as assistant to the vice-president in Pittsburgh, and five years in the sales department in Chicago.

Corporations to Which Charters Have Been Granted Recently

PENNSYLVANIA.

Cove Valley Manufacturing Company. Capital stock \$24,000. Treasurer: C. F. Moul, Hanover, Pa. Directors: C. F. Moul, Hanover, Pa.; G. M. Wiley, C. E. Wiley, New Freedom, Pa.; D. I. Cunningham, Homer City, Pa.

Hemlock Electric Company. Capital stock \$5,000. Treasurer: M. Milleisen, Bloomsburg, Pa. Directors: E. R. Sponsler, Harrisburg, Pa.; M. I. Low, Lime Ridge, Pa.; A. W. Duy, Bloomsburg, Pa.; C. M. Creveling, Almedia, Pa.; W. F. Lowry, Berwick, Pa.

Valley Township Electric Company. West Hemlock Electric Company. Same as above in every particular.

Pennsylvania Patent Umbrella Company. Capital stock \$30,000. Treasurer: K. Posiga, Steelton, Pa. Directors: Stephen Prich, Martin Peros, K. Posiga, Rev. Elias Gusich, Joseph Howarth, all of Steelton, Pa.

Pittsburgh Foundry & Manufacturing Company. Capital stock \$10,000. Treasurer: Joseph J. Goldsmith, Carnegie, Pa. Directors: Jacob Davis, Benjamin Davis, Uniontown, Pa.; Joseph J. Goldsmith, Carnegie, Pa.

Belvoir Fuel Gas Company. Capital stock \$5,000. Treasurer: L. S. Williams, Harrisburg, Pa. Directors: L. S. Williams, George T. Eldridge, A. S. Graham, all of Harrisburg, Pa.

Belvoir Gas Light Company. Capital stock \$5,000. Same as above in every particular.

Mutual Manufacturing Company, of Pittsburgh. Capital stock \$5,000. Treasurer: J. L. Hunt, 1913 South Carson street, Pittsburgh. Directors: Daniel Lutz, Hays, Pa.; J. L. Hunt, M. E. Jackson, I. E. Laughlin, W. G. Miller, all of Pittsburgh.

Lacolle Coal Mining Company. Capital stock \$5,000. Treasurer: B. E. Sheibley, York, Pa. Directors: J. N. Crossland, New Florence, Pa.; B. E. Sheibley, S. B. Meisenhelder, York, Pa.

Motor Supplies Company. Capital stock \$20,000. Treasurer: Jacob Bauer, 1817 Venango street, Philadelphia. Directors: Harry A. Houseman, Jacob Bauer, V. McC. Fulton, all of Philadelphia.

NEW YORK.

International Gas & Electric Fixture Company, New York; manufacture gas and electric fixtures; capital, \$4,000. Incorporators: Joseph Moshkowitz, No. 5305 Fifth avenue; Isaac Wolsky, No. 3878 Fourth street; Samuel Berlin, No. 1876 Douglass street; William Rubin, No. 191 Madison street, all of Brooklyn.

Oldham Engineering Company, New York; manufacture engines, generators, pumps, bridges, structural work, etc.; capital, \$20,000. Incorporators: David J. T. Oldham, William S. Miller, Buel C. Haff, all of No. 115 Broadway, New York.

The Birdsall Coal Company, Mineola, N. Y.; lumber, coal, wood, building material, etc.; capital, \$20,000. Incorporators: Ernest E. Birdsall, Edward Schmid, Edgar J. Armstrong, all of Mineola, N. Y.

Manhattan Railway Supply Company, New York; manufacturing and deal in railway supplies; capital, \$110,000. Incorporators: Alexander J. Hamerslough, No. 79 Fifth avenue; Arthur L. Strasser and Leonard M. Wallstein, No. 160 Broadway, all of New York.

The Van Buren Engineering Company, New York; manufacturing machinery, power and excavating machinery and metal products used in the arts and sciences, etc.; capital, \$15,000. Incorporators: George G. MacCracken, Daniel J. Haner and C. Raymond Weaver, No. 21 Park Row, New York, and others.

Standard Service Company, New York; deal in lighting, heating, coaling, cooking and ventilating apparatus; capital, \$30,000. Incorporators: William T. Smith, Rockaway, N. Y.; Harry R. Weller, Roseville, N. J.; Albert Bykeffer, No. 208 Covert street, Brooklyn; James C.

Van Neu Manufacturing Company, No. 170 Broadway, New York; manufacturing mechanical tools, particularly typewriters and their equipments; capital, \$160,000. Incorporators: Winfield S. Van Horn, Edward Neumann, Anton Neumann, Jersey City, N. J.; Thomas A. Hill, No. 395 Monroe street, Brooklyn, N. Y.

Retractile Manufacturing Company, New York; manufacturing tools, machines and apparatus; capital, \$100,000. Incorporators: George A. Arnold, No. 404 West 145th street, New York; Chester H. Briggs, Plainfield, N. J.; Charles E. Perkins, Yonkers, N. Y.

Artificial Building Stone Company, New York; manufacturing concrete blocks, etc.; capital, \$23,000. Incorporators: Alexander Otis, N. J. Weldgen, Charles S. Thurston, Rochester.

Republic Elevator & Machine Company, Rochester, N. Y.; manufacturing machinery, elevators, tools, etc.; capital, \$30,000. Incorporators: Fred A. Stoffel, No. 242 State street; George H. Fegan, No. 3 Hobson street; Harvey L. Morgan, No. 52 Atkinson street, all of Rochester, N. Y.

Colombia Cyaniding Company, New York; mines and mining in Colombia, S. A.; capital, \$60,000. Incorporators: Frank P. Cavanah, Boise, Idaho; Robert L. Pellet, Watkins, N. Y.; Thomas Berry, No. 790 Jefferson avenue, Brooklyn.

The Sterling Casket Hardware Company, Brooklyn; manufacturing and deal in iron, steel, etc.; manufacturing casket hardware, etc.; capital, \$10,000. Incorporators: George R. Bailey and Flynn E. Bailey, No. 145 Taylor street, Brooklyn; Jackson A. Nichol, No. 30 Park Row, New York.

James Cunningham, Son & Company, Rochester, N. Y.; manufacturing and repair carriages and vehicles; capital, \$1,200,000. Incorporators: Joseph T. Cunningham, Rufus K. Dryer, James C. Dryer and Augustine J. Cunningham, No. 13 Canal street, Rochester, and three others.

Submarine Rock breaking Company, New York; submarine dredging, etc.; capital, \$100,000. Incorporators: Frank B. Hall, No. 121 East 40th street, New York; William H. Sayne, No. 17 Battery

Place, New York; Charles L. Rowland, Carbondale, Pa.; Edward B. Jenks, No. 143 Liberty street, New York.

ILLINOIS.

South Side Pattern & Model Shop, Inc., Chicago; manufacturing models and patterns; capital, \$2,400. Clyde Machine Works Company, No. 39 Union avenue, Chicago, Ill.

Illinois Portable House Company, Chicago; manufacturing steel frame portable houses; capital \$2,500. Jacob Diamond, No. 810 Tacoma building, Chicago.

Railway Automatic Mail Device Company, No. 134 Monroe street, Chicago; to manufacture railway supplies; capital, \$10,000. Incorporators: J. H. Dunn, R. W. Waugh, Percival Steele.

Johnson-Bone Switch Throw Company, Decatur, Ill.; to manufacture railway appliances; capital, \$40,000. Incorporators: A. R. Scott, Max H. Hurd, J. L. Bones.

G. Mathes Iron & Metal Company, 41st street and Lowe avenue, Chicago; junk dealers; capital, \$100,000. Missouri corporation.

Queen Wind Shield Company, No. 112 South Clark street, Chicago; general manufacturing; capital, \$2,500. Incorporators: Harry P. Sinden, Cyril R. Janus Karl E. Rada.

Marquette Motor Vehicle Company, No. 1606 Fort Dearborn building, Chicago; to manufacture automobiles, motors and vehicles; capital, \$20,000. Incorporators: Isaac L. Marks, David J. Marks, Isaac B. Lipson.

United Motors Company, No. 820 Reaper Block, Chicago; to manufacture automobiles, motors and accessories; capital, \$5,000. Incorporators: William F. Grey, George L. Derr, Delaven B. Cole.

Victor Alarm Lock Company, First National Bank building, Chicago; to manufacture safes and locks; capital, \$2,500. Incorporators: Wilbur C. Gross, Norman C. Darnell, Frank Forest.

Greenup Machine Company, Greenup, Ill.; to manufacture machinery; capital, \$8,000. Incorporators: E. B. Stewart, W. H. Shubert, J. W. Ward.

Abingdon Light & Power Company, Galesburg, Ill.; to operate an electric plant; capital, \$30,000. Incorporators: J. J. Welsh, A. K. Hardy, Judd Hartzell.

DELAWARE.

Rendall Steel Company, capital, \$500,000. Incorporators: W. C. Dailey, Philadelphia; S. S. Adams, Jr., and J. G. Gray, Wilmington.

Scranton Steel Construction Company, Wilmington. Incorporators: M. J. Hanon, J. M. Jenkins, M. P. Gorton, Scranton, Pa.

P. & O. Manufacturing Company, Wilmington; capital, \$500,000. Incorporators: J. S. Kaufmann, Ben Avon, Pa.; R. Robbuss, Crafton, Pa.; L. O. Birmingham, Coraopolis, Pa.

Jeffrey Steel & Iron Company, Wilmington, Del.; capital, \$100,000. Incorporators: F. R. Hansell, Geo. H. B. Martin and S. C. Seymour, all of Philadelphia.

Standard Wire Cloth & Screen Com-

pany, Wilmington; capital, \$225,000. Incorporators: F. M. Shive, S. E. Roberson, Harry W. Davis, Wilmington.

American Rust-Proof Gun Barrel Brass Shining & Gun Manufacturing Company, Wilmington; capital, \$125,000. Incorporators: Edward G. Cook, George L. Medill, Anna L. Dorsey, Wilmington.

British Columbia Railway & Development Company, Wilmington; capital, \$12,000,000. Incorporators: Dean V. Wolkenstein, Harold G. Villard, Jas. W. Howie, New York; Sylvester G. Townsend, Wilmington.

Standard Brick Company; capital, \$300,000. Incorporators: F. F. Wright, P. K. Stauff, G. Q. Dean, No. 81 Nassau street, New York.

NEW JERSEY.

Sciple-Gochenaur Manufacturing Company, No. 135 East State street, Trenton, N. J.; manufacturing boilers, marine and other engines; take over business of W. E. Gochenaur, No. 631 Arch street, Philadelphia; capital, \$50,000. Incorporators: Cassel R. Ruhlman, Trenton, N. J.; John R. Boyer and W. B. Warnes, both of Philadelphia, Pa.

Gathering Mining & Exploration Company, Jersey City, N. J.; mining, etc.; capital, \$25,000. Incorporators: Wm. P. Christopher, No. 46 East 14th street; Leth Harris, No. 412 E. 79th street, both of New York; Geo. Brauberger, No. 1026 Lafayette street, Elizabeth, N. J.

Maxwell-Briscoe Omaha Company, Jersey City; to manufacture automobiles and parts thereof; capital, \$2,000. Incorporators: S. A. Anderson, J. R. Turner, B. S. Mantz, as above.

Main Line Oil Company, Camden; to prospect for petroleum and other mineral oils; capital, \$150,000. Incorporators: F. R. Hansell, William F. Eidell, I. C. Clow, as above.

Empire Brick & Sand Company, Jersey City; to manufacture bricks, tiles and pipes; capital, \$50,000. Incorporators: John S. Crump, Bayside, L. I.; Charles H. Stanton, T. Newell Pfeiffer, No. 42 Broadway, New York.

WEST VIRGINIA.

United States Aluminum Company, of Connellsville, Pa. Capital \$100,000. Incorporators: H. A. Dane, J. D. Madigan, Wash Herd, D. D. Fretts and J. A. De Witt, all of Connellsville.

The Lesser Manufacturing Company, of Warren, Pa. Capital \$10,000. Incorporators: F. R. Mount, G. W. Baird, J. T. Austin, G. A. Lesser and J. W. Elliott, all of Warren, Pa.

Eucid Water Filter Company, of Sistersville. Capital \$30,000. Incorporators: W. J. Brown, S. W. Lawrence, L. C. Hartsough, George Hill, Edward Roome, C. A. Kink and Jacob Schlemmer, all of Sistersville.

West Virginia Fire Clay Manufacturing Company, of New Cumberland. Capital \$50,000. Incorporators: W. W. Ballantyne, C. A. Ballantyne, Lucie B. Ballantyne, Ola M. Beaver and R. M. Brown, all of New Cumberland.

INDIANA.

Thomas Wonder Auger Company, Evansville; \$10,000; to manufacture coal mine augers. Directors: M. E. Thomas, H. R. Fink and A. P. Schrader.

Elkhart Motor Car Company, Elkhart; notice of increase of capital stock to \$200,000. W. W. Stirling, President.

OHIO.

Woods Engineering Company, Alliance; F. C. Woods, F. A. Woods, F. A. Hobbs, W. C. Brown, H. H. Woods; capital, \$30,000.

Orr Machine and Foundry Company, Zanesville; Clyde Reasoner, George Dieterly, C. R. Dieterly, Harry T. Orr, Simon Luise; capital, \$10,000.

South Webster Clay Products Company, South Webster; increase of capital from \$100,000 to \$1,000,000.

The Winslow Manufacturing Company, Toledo; increase of capital from \$60,000 to \$100,000.

The Graham Mining Company, Toledo; U. S. Grant Deaton, George A. Gorsuch, Edward J. Held, Lucius Hughes, Fred C. Belmke; capital, \$10,000.

MISSOURI.

Kustel Telephone and Electric Supply Company of St. Louis; capital, \$9,000. Charles Rompel, Henry Kuhlmann and Fred Gent.

Foreign corporations licensed in State. Spencer Heater Company of Pennsylvania; capital stock, \$200,000, of which \$1,000 is to be employed in St. Louis.

St. Mary's Machine Company of Ohio; home capital, \$15,000, of which \$3,000 is to be employed in St. Louis.

J. C. Hirshman & Company of Indiana; home capital, \$15,000, of which \$3,000 is to be employed at Kansas City.

MASSACHUSETTS.

Wheelock Rust Proof Fence Company, Worcester; to deal in fences of all kinds; capital, \$30,000. President, John H. Wheelock, and treasurer, Walter Warren, Leicester; clerk, Paul L. Wheelock, No. 743 Main street, Worcester.

American Automatic Sales Company, Boston; dealing in automatic vending machines; capital, \$30,000. President, Benjamin Cass, No. 266 Laurel street; treasurer, Chas. H. Foster, No. 1365 Williams street, both of Manchester, N. H.; clerk, Geo. M. Faulkner, No. 1124 Commonwealth avenue, Brookline.

KENTUCKY.

Barlow Canning Company, Barlow; \$10,000. J. C. Barlow, Crice and Wilford, J. M. Meshew, W. O. Chapman and others.

Pelican Coal & Iron Syndicate, Louisville; \$100,000. Thomas J. Willett, Newell G. Alford, C. P. Chappel, W. H. Slaughter.

Barnes-Kelley Manufacturing Company, Owensboro; capital stock, \$25,000. Incorporators: E. M. Barnes, A. P. Duncan and J. B. Duncan.

New Electric Railway is being financed by Wheeling, Cadiz & Tuscarawas Traction Company, C. A. Townsend, president, to operate between Wheeling, W. Va., and Uhrichsville, O., by the way of Cadiz, O., with a branch running up to Adena, O. The power will be furnished by 1,200 volt D. C. system, one main power house and two sub-stations. There will be 51 miles of track, 48 steel bridges and 14 concrete viaducts.

The American purchases of copper ore from Servia in the year ended June 30 amounted to \$551,937.

CEMENT TRADE IN CANADA.

Increase Four-Fold in Five Years.

In reporting upon the development of the cement industry in Canada, Consul James M. Shepard, of Hamilton, states that from a government bulletin it appears that the use of domestic-made cement has increased from 600,000 barrels in 1903 to 2,600,000 barrels in 1908. Previous to 1904 the imports of Portland cement were larger than the Canadian production. For 1909 they are estimated at 14 per cent of the total consumption. Hamilton has some 150 miles of sidewalk and several fine buildings constructed of American cement, which when supplied was of better quality and lower in price than Canadian manufacturers were willing to offer. This year the city's need has been small and American competition less earnest, so that a contract for 12,000 barrels, of 350 pounds each, was awarded to a Canadian Company at \$1.23½ per barrel.

In 1908, 23 cement plants were in operation in Canada, with a total daily capacity of 27,500 barrels, or an annual output of some 8,250,000 barrels if all were running full time. The price of cement, was considerably lower in 1908 than in 1907; sales were greater, but cash returns less. The value of cement sold in 1908 was \$3,709,139; average price per barrel, \$1.39; wages paid, \$1,275,638; number of men employed, 3,029.

Consul A. G. Seyfert writes the Bureau of Manufacturers from Owen Sound that all but one of the cement mills in that Canadian district have closed for the summer, on account of the keen competition and lower prices of a large concern at Belleville.

Consul George W. Shotts, of Sault Ste. Marie, is informed that all the cement companies in Canada have been organized into the Canadian Consolidated Cement Company, capital stock \$30,000,000, the Royal Trust Company, of Montreal, acting as trustees.

"Alas!!" confessed the penitent man, "in a moment of weakness I stole a carload of brass fittings."

"In a moment of weakness!" exclaimed the Judge. Goodness, man! what would you have taken if you had yielded in a moment when you felt strong?"

According to Consul Lester Maynard, of Vladivostok, the Russian Government has decided to double track the Trans-Baikal Railroad, for which it will be necessary to float a loan of \$18,000,000.

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THE IRON AND STEEL SITUATION.

NOT for a long while has the American iron and steel industry passed through such changes as have occurred in the past few months. A remarkable history has been made this year. The year opened with the famous price maintenance movement, already prosecuted for more than a year, on a decidedly shaky foundation. It was resting then on the enthusiasm created by the election boom, and as that enthusiasm waned the substance of the influences which had been holding the producers together in an effort to maintain old prices began to disappear rapidly, with the result that on February 18 it was decided to abandon all efforts to hold prices.

The history of the market since that break cannot be understood without consideration being given to the forces which had hitherto been at work. It was often remarked during the progress of the price maintenance campaign that its true inwardness would not appear plainly until it could be seen in the retrospect. That statement has been amply verified. Who, for instance, would have asserted that the movement depended upon such forces that it would go to pieces in the length of eight months of continuous increase in production? That, however, is exactly what occurred. The monthly statistics of pig iron production show that June, 1908, was a month of low production, and that each subsequent month saw a gain in the rate of

production. A movement of this sort might go to pieces because of the accumulation of stocks, resulting from increasing production, but no such condition existed as regards the steel industry. There were accumulation of merchant pig iron, but they did not affect the finished steel trade. Briefly, it was the force of despair which held producers together in that movement. There was nothing like enough business to go around, and it was recognized that no one, however brilliant in timing his onslaught, could hope to make money by breaking the market. It was recognized that there was not much business, and that with light operations costs per ton were high, and prices could not be cut with the promise of gain through full operation. The movement was conducted for the restoration of confidence, and had the election boom continued to give a good account of itself, the movement might have been carried to the conclusion which its friends appeared to expect. Early in the year it became evident that the election boom did not have the amount of substance that was expected. The outcome was the last trial to the patience of the manufacturers. That was one cause of an open market policy being adopted. Another was that inasmuch as 15 months of depression had been bridged over, there were vastly better expectations of large tonnages being induced by lower prices.

Whether the price maintenance campaign was a success or a failure remains a debatable question. There are those who assert that it postponed the recovery. There are others who insist that it did a great deal of good and that however some individuals may have been effected, the sum total of effect was good.

Since about the middle of the second quarter of this year the trend of prices of iron and steel products has been steadily upward, while production has been steadily increasing. It required between two and three months for prices to work down to the bottom. That is really only a short time, but it is worth while to note that the time might have been still shorter had it not been for that election boom. Pig iron had found a bottom, in October last, while the election boom put prices up by an average of about \$2 a ton. When the steel market broke, pig iron had to go and find its bottom over again, and it found it at about the same place as formerly. During the decline, the steel market was naturally influenced. Had pig iron remained at the bottom found in October, steel prices would probably not have been so long in finding their bottom, and the period of readjustment, short as it was, might have been still shorter.

There are those who criticize the pres-

ent market situation in that the advances are too rapid. We do not agree with them. In the first place, it is not a question of the rate of advance, but of the total advance. If the position is entitled to an advance of \$4 a ton, for instance, it does not follow that there will be trouble if the advance is made quickly. The total amount of the advance thus far, is not large. It has brought pig iron only about \$2 a ton above the low point of last May, on the average, and that amount can hardly be considered excessive. Finished steel products have, on the average, advanced more than this, but they are still well below the level of last January.

In the second place, the present alignment of prices has one very strong element. In all instances the tendency is for prices to be higher, the farther forward the delivery. This is true in pig iron and it is true likewise in finished steel. A market is not top-heavy when it is in this position. The condition allows those who do not fully participate in the enthusiasm to postpone their forward purchases.

PRODUCTION AND RESERVES OF IRON ORE.

PRODUCTION of iron ore in the United States in 1908 is reported by the Geological Survey at 35,983,336 tons of 2,240 pounds, valued at \$81,845,904, at mines, an average of \$2.27 per ton. The value per ton varied greatly in the different districts, the Michigan output being valued at nearly \$3 a ton, while the Pennsylvania, Tennessee and Alabama ores were valued at only from \$1 to \$1.50 per ton.

Precise annual statistics of iron ore production have been gathered only since 1889, the 1890 census taking that year, while for subsequent years annual statistics have been gathered by the Geological Survey. The 1889 production was 14,518,041 tons, while 1892 showed an increase to \$16,296,666 tons. Then there was a sudden recession to 11,587,629 tons in 1893. From that year the gain was almost continuous. Production in the past eight years has been as follows:

1901	28,887,479
1902	35,554,135
1903	35,019,308
1904	27,644,330
1905	42,526,133
1906	47,749,728
1907	51,720,610
1908	35,983,336

The production in 1908, it may be noted, was large in proportion to the year's pig iron production. In previous years ore production had been running pretty steadily at the rate of a trifle less than two tons of ore to one ton of pig iron, and the same ratio would have called for a production of something like 31,000,000 tons of ore in 1908. The produc-

tion was some 5,000,000 tons in excess of this, and the excess may be attributed to the fact that the industry was getting ready for a large revival in pig iron production this year, since as regards Lake Superior ore, the ore must be mined in one year for the pig iron produced in the first five or six months of the next year.

The total production of iron ore in the United States in the 20 years, 1889 to 1908, inclusive, is given at 511,145,463 tons. An allowance for imports and exports in the period makes the apparent consumption in the period about 525,000,000 tons. The pig iron production in the 20 years, according to the American Iron & Steel Association figures, has been 273,153,995 tons, which works out an average of 1.922 tons of iron ore per ton of pig iron. In some districts, of course, the ore per ton of pig iron is considerably more, while in other districts it is materially less.

While there are not accurate statistics, we estimate the production of iron ore in the United States, prior to 1889 at about 200,000,000 tons, so that with 511,145,463 tons in the past 20 years, the total production to the beginning of this year has been a little over 700,000,000 tons. It is well to consider our total achievements in these matters, for the reason that iron and steel products are not consumed as made, but are put into use, and the major part of the material made is still in employment, although some of it has been re-worked into new forms. There is probably in the neighborhood of three tons of iron and steel in use to-day, per capita of our capitulation.

By the end of this year we may take it that we shall have produced about 750,000,000 tons of iron ore in the United States, and this tonnage may, with some profit, be compared with the estimates of the ore known to remain in the ground. Exact comparisons cannot be made, for there is no definite point at which the line between iron ore and worthless material, containing iron, can be drawn, even at a given time. For the future the situation is still more vague, for conditions and processes change and what is the useless material of to-day may to-morrow be regarded a valuable ore. Some notes, however, can be made.

In an official statement furnished by the United States Steel Corporation to Joseph G. Butler, Jr., the corporation's northern ores, "of present standard commercially," are given at 1,258,289,000 tons, or one and two-thirds times the total amount mined in the country to the present. Besides this the corporation estimates it has silicious and other low grade ores in the north and southern ores, bringing its grand total to 2,322,434,000 tons, or more than three times

the country's production to the present.

The estimates of the iron ore supplies of the United States, prepared by C. Willard Hayes, chief geologist of the United States Geological Survey, for the use of the Conservation Commission, gave the total of "available" ore at 4,788,150,000 tons, and the total of "not available" at 75,116,070,000 tons. The latter, it may be remarked, stands a chance of being made available, by changes in conditions and processes.

Mr. Butler's estimate of ore "of the present commercial standard, available in the immediate future" is 4,462,940,000 tons, or six times the amount thus far mined and which has left the country with a store of iron and steel, in actual use, of roughly three tons per capita.

The three principal fields in the new iron ore region in Cuba are estimated to contain as follows:

Mayarie	500,000,000
Moa	350,000,000
Cubitas	150,000,000

Total 1,000,000,000

In the middle nineties, when the new Mesaba range was supposed to have been pretty well exploited, an estimate was made that the whole Lake Superior region contained something like 750,000,000 tons of ore, a quantity so large that no one bothered attempting to make an estimate of how much ore there might be in other parts of the country. In less than a decade and a half the well-known deposits have increased several fold, so that the total is now many times the amount already produced.

OUR RETROSPECT.

OUR issue of September 13, 1889, an even 20 years ago, has a leading editorial on the course of iron and steel prices. It seems there had been criticism that prices were advancing too rapidly, and predictions of disaster were being made. The editorial gives a full statistical comparison of prices of pig iron, muck bar, old iron rails, finished iron, steel rails, billets, etc., and shows that while prices had advanced from \$1 to \$3 a ton from the low points in the year, which were chiefly in the second quarter, they were substantially the same as those which ruled at the beginning of the year. Somewhat the same condition exists at the present time. There has been an advance, and some criticisms are being made that the advance is too rapid. Pig iron is a trifle higher than at the beginning of the year, while finished steel products are somewhat lower. There is a striking difference from the condition in 1889, in that the drop in the second quarter was much greater this year.

It may be interesting to observe how the future treated that editorial defense

of the moderate rise in prices. Instead of the advance which had occurred proving disastrous, it was merely the forerunner of a much greater advance, which entirely cast in the shade the slight advance which had been made and which was defended in the editorial. From September 13, 1889, to January of the following year, Bessemer pig iron advanced \$5.50, gray forge pig iron \$2.75, steel rails \$6, cut nails 50 cents a keg and bar iron 15 cents per 100 pounds. Then, indeed, there was real ground for alarm, and prices did decline, and the average prices of 1890-1-2, three prosperous years, were somewhat lower even than those at the beginning of September, 1889.

This issue of 20 years ago contains an interesting statement of the increase in the weight of rails laid down. It is pointed out that by reason of "increasing traffic, greater speed of trains, increased weight of locomotives, greater capacity of freight cars," a better road-bed and a heavier rail are required. The result was that roads which had been using 56-pound rails were taking 60 and 65-pound rails, while roads which had been using 65 and 67-pound rails were taking 70 and 80, and even 90-pound rails.

Our English correspondent has some remarks to make about the rolling of fluid metal. The Norton-Hodgson experiments were being made in Chicago, and it is pointed out that the process was not new at all but was covered to be one of the Bessemer's lapsed patents. Bessemer's process was first patented in 1846, applied to the rolling of fluid glass. In a patent in 1857 Sir Henry (then Mr.) Bessemer, described the rolling of sheets, plates, bars and other forms direct from fluid malleable iron or steel. The process was included in the licenses granted for working the Bessemer steel process, but was not taken up as it was not considered feasible in England. The Chicago experiments proved the same thing, although at a considerably later date.

These retrospects would not be complete without occasional reference to our advertising columns. We find many of our present advertisers in this issue of 20 years ago, but in many cases the names have changed, largely through the change from partnership to corporate existence. Many of our old advertisers, of course passed into consolidations and now represented in a different form. We find some advertisers with identically the same name as 20 years ago, including the following: Avery Stamping Company, Joseph Dixon Crucible Company, Koehler & Streng, Lewis Foundry & Machine Company, Riehle Brothers, and L. & R. Wister & Company.

Market Conditions, Prices in Producing and Buying Centers

Steel Lines Feel Effect Of Rising Iron Market.

PITTSBURGH.—With an utter absence of speculative buying movements in either the iron or steel markets, the first half of September is closing without the expected general advance in semi-finished steel lines, while all grades of pig iron have reached a high point that was not anticipated before the middle of October. Reports of definite advances on bars, plates and shapes which were afloat during the week are incorrect. Some slight advances in these products have been made by small independent concerns, but the larger interests whose price schedules fix the market have made no change in quotations in these lines.

The Carnegie Steel Company's prices on bars, shapes and plates remain nominally at 1.35c on bars and 1.40c on shapes and plates, but orders are taken at this basis only on very attractive business, while for later deliveries the prices asked are 1.40c on bars and up to 1.50c on plates and shapes. And, as the Carnegie Company will take no orders for delivery prior to the middle of November, and other large steel interests in this district are behind three or four months in orders now specified on their books, the present situation amounts substantially to the fixing of higher price minimums.

The sudden advance of three points in steel shafting brings to notice the fact that the machinery makers have been slow in recovering from the depression, and have only now begun to get the full benefits of prosperity. The new price on shafting is 57 per cent off list in carload lots, the advance amounting to about \$3 a ton. Several of the iron pipe mills have advanced the price of iron pipe about two points, or \$4 a ton, but the expected withdrawal of present quotations on merchant steel pipe has not yet occurred, notwithstanding a rush of orders experienced by the National Tube Company and several other large producers during the first two weeks in September.

In point of tonnage affected, the settlement of the strike at the McKees Rocks plant of the Pressed Steel Car Company was the most important event of the week in Pittsburgh. The company began specifying for material against its contracts with the Carnegie Steel Company immediately.

The company's maximum capacity of 125 cars a day at the McKees Rocks plant, which has never been tested, will

probably be utilized during the coming two months, which will mean a large increase in the demands on the Carnegie mills. Although the Carnegie Company has not as yet booked any reservations for steel rails for 1910, several of the Eastern trunk lines are almost ready to place a considerable tonnage for winter rolling. The company during the week booked orders for about 2,600 tons of light rails for immediate shipment. The Edgar Thomson rail mills are running about 60 per cent of capacity—and that is the only weak spot in the Pittsburgh district since the settlement of the steel car strike and the practical breaking of the strike in the sheet and tin mills.

Bessemer iron for immediate shipment is firmly fixed at \$17, Valleys. The furnace interests are asking as high as \$17.50, Valleys, for the first quarter of 1910, and are predicting that it is only a matter of a few weeks until the price on next year's Bessemer will be advanced to \$18 at Valley furnaces. The last sale of any considerable tonnage for 1910 delivery was more than a week ago, at \$17; and since Bessemer for this year's delivery has reached its new high point buyers have been sparing for position on 1910 prices.

The Jones & Laughlin Steel Company got in under the wire with the last purchase of Bessemer at \$16.75, taking 10,000 tons for immediate delivery. On that sale the market went to the new price of \$17, Valleys, which is \$17.90, delivered Pittsburgh. Several lots of 1,000 tons for October shipment were taken up late in the week at \$17. Ten days ago it was predicted that, when Bessemer reached the \$17 mark, it would remain there until at least the close of October; but the tone of the market was exceedingly buoyant during the week, and there is no assurance that buyers will be able to do as well as present prices on October 1.

Basic iron also made a notable advance during the week. The invasion of the Pittsburgh market a week ago by Eastern consumers, who wanted prompt basic at \$18, Philadelphia, was responsible for first raising the price above \$15.50. One Eastern steel works took 5,000 tons at that price, which realized the Western Pennsylvania furnace between \$15.50 and 15.75. A local sale of 1,000 tons at \$15.75, Valleys, was all that was needed to bring a further rush in which basic for this year's delivery reached \$16, one sale of 300 tons and another of 1,000 tons having been made the latter part of the week at that figure.

All the Eastern inquiries have not been filled, and it is doubtful if they can be at the present new levels reached by basic. Prompt basic iron even at \$15.75, Valleys, would mean \$18.70, delivered Philadelphia. The latter part of the week one Philadelphia interest entered the Pittsburgh market for basic iron for the first quarter, but if this business is taken it will probably be by some furnace interest outside the Valleys, with a better freight rate into Philadelphia.

It is not thought the Standard Steel Car Company, which was reported in the market for a large tonnage of basic for next year, for use at its projected steel plant at Butler, has yet closed for any of the tonnage. A new interest in the market during the week was the West Penn Steel Company, which bought 4,000 tons of basic for delivery during the remainder of the year for its new sheet and bar mill at Brackenridge, Pa. The new company expects to be in operation the latter part of October. The market for 1910 on basic is no easier to gauge than on Bessemer, the rise having been so rapid in the past 10 days as to give little chance for the making of definite prices on next year's shipments. Some 1910 business undoubtedly has been on the basis of \$16, Valleys, though it is doubtful if this price could be duplicated.

Foundry iron showed very strong at \$15.75, Valleys, during the latter part of the week, for early delivery. A number of furnaces were quoting No. 2 foundry at \$16, though no sales of any importance were reported at that level. Foundry iron for next year is well defined, quotations ranging at \$16.25 for first quarter and \$16.50 for all of the first half of 1910, which figures still might be shaded a little. Although malleable is quoted on regular delivery at \$16.25 Valleys, one lot of 200 tons brought as high as \$17, furnace. There were rumors during the week that the United States Steel Corporation might come into the market for 40,000 to 50,000 tons of Bessemer, but no confirmation could be secured to this report—though the Steel Corporation probably would be a buyer on the present market, if it could find any low-priced iron.

Regular producers of semi-finished steel are so well filled in their own finishing departments that they do not desire to take on any business in the semi-finished product. As a result of the restricted output for the open market, prices of Bessemer billets have been advancing.

The minimum is \$25, Pittsburgh, plus full freight to destination. Rods remain

nominally at \$31, but it is somewhat doubtful if any can be had at that figure. Many producers will not quote at all for immediate delivery, and sales have been made at considerably over the minimum price. Sheet mills also are endeavoring to add additional tonnage to contracts secured early in the year for sheet bars, the requirements of the finishing mills being much greater for the year than the earlier estimates called for. The extra tonnage in some cases has only been granted by the bar mills at the full market price—a considerable advance over the contracts made early in the year. This demand for early sheet bars has greatly increased the tension in the semi-finished steel trade. Sheet bars are still quoted, however, at \$26 to \$27, but the shading that was noticed earlier in the year has entirely disappeared. Early in the summer a considerable tonnage of sheet bars was sold at \$24, Pittsburgh, and much of this tonnage still is being filled by the Pittsburgh district mills.

Small orders for structural work secured by local companies during the week aggregated perhaps 10,000 tons for Pittsburgh district. The only large orders reported for fabricated materials were from the Burlington Lines, the Acheson, and the Chicago & Northwestern, which aggregated about 8,000 tons, all taken by the American Bridge Company, a large part of it going to the Ambridge plant. The McClintic-Marshall Construction Company secured a 400-ton contract, for new shops for the Aluminum Castings Company of Detroit, and a contract for 250 tons of new construction for the Pittsburgh Steel Company, at Monessen. The Jones & Laughlin Steel Company will furnish the material for the 1,500 tons of new buildings for the Ayer mills, at Lawrence, Mass.

There was little or no change in the scrap market, the new high prices being well held. Some dealers over-sold slightly during the rush at the beginning of the month but all have now covered, and temporary fluctuations that ruled 10 days ago have disappeared. Heavy steel scrap is once more easy to get at \$17 to \$17.25, though in some cases as high as \$17.50 has been paid.

According to partially confirmed news reports, the Standard Car Company is preparing for still more extensions to its plants north of Pittsburgh. The steel mill announced some time ago to be built at Butler in connection with the Forged Steel Wheel Company's plant there will be equipped for rolling plates and shapes, in addition to the six-ton open hearth furnaces planned. The plant at Elwood City, operated by the Steel Car Forge Company, a subsidiary, also is to be enlarged, ground having been purchased for the new additions.

Lull in Structural Trade; Pig Iron for New England.

NEW YORK.—There has been a marked lull in structural lettings during the week just ended, though business in other lines, particularly in semi-finished steel, is reported much heavier than during the last half of August. New England melters again are to the front with large inquiries for foundry iron for 1910. Sales from that district during the week for first quarter and half of 1910 are estimated at 40,000 tons. No. 2 Northern foundry is held firmly at \$18 to \$18.50, tidewater, for delivery through the balance of this year and the first quarter of 1910. Buffalo furnaces are holding at \$16, furnace, for prompt iron and \$16.25 for first half. There still is a scarcity of low grade iron throughout the east.

Cable reports early in the week of the sale of 40,000 tons of "high grade pig iron for steel making" for export to the United States, which were extensively published by the daily press as coming from Dusseldorf, Germany, are not credited here. There are no reports of any attempt at an import movement in foreign iron. It is thought that the purchase was of spiegeleisen, and that the publication was made through an error in translation. Heavy inquiries for spiegeleisen and large transactions in ferro-manganese have been a feature of the local market all week. One Philadelphia importing house is buying 30,000 tons of spiegeleisen from foreign makers. At least 10,000 tons of ferro-manganese changed hands in New York during the week, some of it at a slight advance in price. Quotations have advanced to \$44 for this year's delivery and \$45 for 1910. Demand for ferro-silicon is light, and although \$65, New York, is being quoted, sales have been made at \$1 under this figure.

The small tonnage involved in structural contracts now pending has made competition between fabricating companies keener than ever, and though the larger companies are endeavoring to maintain price levels slightly higher than those quoted during the summer, the smaller companies are indulging in considerable price cutting. August bookings by the American Bridge Company, aggregated 32,000 tons exclusive of the West Chester contract, which was not formally entered during the month. Several local railroad and municipal bridge and pier contracts pending will total about 4,000 tons. Apartment house lettings during the week, for a total of perhaps 5,000 tons, were taken by local companies.

The autumn demand for cast iron pipe is more active than earlier in the year. New York City is buying about 2,500

tons. Some buyers are getting quotations on large lots for next spring's deliveries, and manufacturers are naming prices substantially in advance of present quotations. For present deliveries, actual sales show a range of \$24.50 to \$25.50, net ton, tidewater, for carload lots of 6-inch. Heavy melting scrap, and other grades as well in the old materials market shows an easier tone, and large stocks held in expectations of higher price levels are being put out at the present quotations.

New Bookings of Rail Orders Aggregate 60,000 Tons.

CHICAGO.—During the fortnight just ended the Illinois Steel Company's bookings of standard rails aggregated 100,000 tons, for deliveries beginning in November and running through to April 1 of next year. All these bookings are for Western roads, a single order amounting to 30,000 tons, while another from an Idaho road was for 4,000 tons. All but 10,000 tons of this aggregate is for open-hearth, and will be rolled at Gary—thus giving the big rail mill there the additional business that was needed to fill up its capacity between now and the first of the year. In this connection, it is said quotations on railroad spikes and all branches of track supplies have stiffened considerably as a result of the renewed buying by the railroads.

Northern furnaces seem to have little iron to sell for the present year's delivery. One important Southern interest has withdrawn from the pig iron market, both for this year's and 1910 deliveries. The billet situation shows little relief from the month-old shortage, notwithstanding a fair production is now being secured at the new mills at Gary. There is little tonnage in merchant bars to be had for this year's delivery, and substantial advances are being asked for 1910. The Inland Steel Company has made 1.58c its minimum price for soft steel bars, but the other independent interests have not followed its lead. The leading interest is out of the market entirely on steel bars. The Blue Island Car & Equipment Company's new 10-inch and 18-inch rolling mill is ready to operate, and will probably be turning out bar iron within a week.

The market on Southern pig iron is firmly fixed at \$14.00 for No. 2 foundry for all deliveries for the balance of this year and up to the end of the first quarter of 1910. This is the minimum for this period, beyond which date Birmingham interests will not make any quotations. The only local furnace open for additional orders is making a flat price of \$18.50 Chicago for present and future

shipments through the first quarter of next year. Sales of Northern iron for the week aggregated 30,000 tons, much of it for last quarter delivery.

The mild reaction which appeared in the scrap market recently has apparently spent its force, and the market has been strong again the past week. Railroad offerings continue very light. The Northwestern has a list of 1,000 tons, small for that road. The Rock Island offered 2,700 tons. The railroads are remarkably slow in their offerings. Last winter, when prices were \$2.00 to \$3.00 a ton below the present level, the railroads forced large tonnages on the market, the large systems offering 5,000 to 10,000 tons on each monthly list. Now, with a good demand, they have little to offer even at the \$17.00 level.

More Furnaces in Blast; Hope of \$14 Iron Realized.

BIRMINGHAM.—During the next week or 10 days the number of furnaces in blast in the Birmingham district will be increased by two. No. 4 furnace of the Sloss-Sheffield Steel & Iron Company, at Birmingham, is now ready for the torch and it is expected that the Republic Iron & Steel Company will have its third furnace at Thomas in blast before the expiration of the coming week. With the North Birmingham furnace busy, the Sloss Company will have but one idle stack out of a total of seven. Other furnaces are being made ready for the torch, and before the end of the month the output will have been greatly increased.

Raw material is being accumulated for the furnaces soon to go in blast and this is causing increased activity at the coal and ore mines. The demand for labor is growing in proportion.

A single sale of iron at \$14 per ton, No. 2 foundry, for delivery in the first quarter of 1910, establishing a basis for delivery during the first of the new year, has been followed by other sales at this figure and the tone of the market continues strong.

The rapid rise in the pig iron market has been followed by a corresponding advance in quotations upon old iron material, the advance in some instances being as much as \$2 per ton. The figures for scrap in this district are now as follows: Old iron rails, \$16 to \$16.50; old iron axles, \$17.50 to \$18; old steel rails, \$11.50 to \$12; old steel axles, \$16.50 to \$17; No. 1 railroad wrought, \$13 to \$13.50.

The indications now are that the Southern Iron & Steel Company, formerly the Southern Steel Company, will be in shape for operating its numerous plants by the middle or latter part of October.

Eastern Furnaces Try to Put Basic Iron to \$18.50.

PHILADELPHIA.—Virginia furnaces, and some Eastern Pennsylvania producers, have made a strong effort to put Eastern and Virginia basic to \$18.50, delivered, for this year's delivery. Thus far no important sales have been made on that basis, but a number of sellers have withdrawn the \$18 price even for immediate shipment. Whether they will be able to establish the new figure is a question, for only a week ago several lots aggregating a large tonnage for delivery during the first quarter or first half of next year were disposed of at \$18, delivered. There is considerable tonnage still to be bought for this year, and some of the consumers are evidently preparing to depend on the Valley furnaces for their supply.

The market on foundry iron is in an unsatisfactory condition. The minimum for No. 2X is given as \$17.75, delivered, for this year, while as high as \$18.35 is asked by some furnaces that are well sold up for the remainder of the year. Considerable tonnage was taken at the lower figure and a shade higher, during the week. For next year's delivery, inquiries for the foundry grades are heavy, but with prices ranging \$18.50 and better, those in the market hesitate to buy. Some reports have it that as high as \$19 has been done for No. 2X for 1910.

Throughout the East, there is a marked scarcity of low grade iron, and the Virginia furnaces as a consequence have marked up their prices to the same levels as the higher grades. Pipe makers, as a result of this shortage, may be compelled to melt No. 2 plain instead of the lower grades. The Virginia Coal, Iron & Coke Company is running two furnaces and has largely reduced its stocks.

There has been a gradual stiffening in the prices on plates and structural shapes, as a result of the almost unprecedented demand on the mills. The minimum on plates and shapes with most producers is 1.55c. with occasional premiums of \$1 to \$2 a ton. Rolling billets bring \$27, mill, and forging billets \$29. Steel bars are quoted at 1.50 and 1.55c, the quotations of 1.45c having been withdrawn. Iron bars have advanced from 1.47 to 1.50c as a minimum.

With the week opening with a holiday, announcements of structural and other lettings were not large. About 1,000 tons of Bethlehem beams will go to New Bedford for a spinning mill addition—making at least 20,000 tons of structural materials taken by New England cotton mill interests during the season for extensions and new construction work. A Milwaukee trolley interest has taken

2,500 tons of rails from the Pennsylvania Steel Company. Mills are making every effort to increase output, in an effort to catch up on deliveries, which are becoming badly delayed in many instances.

The joint purchasing arrangement by the Eastern mills for scrap seems to be working satisfactorily. The purchasing agency maintains that it is securing all the scrap it needs at \$17, delivered, while outside interests are paying slightly higher prices, No. 1 steel scrap being quoted as high as \$17.75 in the Philadelphia market.

Southern Ohio Furnaces Get \$16 for Prompt Iron.

CINCINNATI.—Encouraged by the ease with which Birmingham interests obtained \$14 Birmingham, for foundry iron for this year's delivery, Southern Ohio furnaces during the week pretty generally raised their prices to \$16, furnace, for immediate shipments of No. 2 foundry. Sales were made late in the week at that figure, which is a clear advance of 50 cents over the week before, when Southern Ohio foundry iron was considered settled on a basis of \$15.50, furnace. Some Southern Ohio iron for 1910 delivery was sold during the week at the same price, \$16, furnace, though the tonnage contracted at that figure was limited, and agents found it necessary to confirm all orders at furnace after they had been taken. The asking price for No. 2 foundry for 1910 delivered by Southern Ohio interests had risen in almost all instances to \$16.50 by the close of the week, and the market still had an upward tone.

Alabama furnaces sold some iron for prompt delivery just after the first of the month at \$13.50 Birmingham, but for a week the price has been fixed at \$14, with sales of only a limited tonnage, most of the local melters having their requirements well covered for the present year. Some iron for the first quarter of next year was still taken up at the same price, though furnaces were reluctant to close at that figure, and men in the market predicted \$14.50 for 1910 Birmingham iron by the opening of the coming week. Jackson county high silicon irons command \$18.50 furnace for this year, with an additional 50 cents for 1910 deliveries. Transactions for the week in foundry irons in this market aggregated 18,000 tons. The leading pipe interest bought 2,000 tons of pipe making irons, and an Eastern pipe maker is in the market for 2,400 tons for October-November shipment.

The possibility of the coke fields disappointing local foundry interests in deliveries, with the prospects of a car famine to add to the difficulty of obtaining prompt shipments, are responsible for

some uneasiness here. It is considered possible that a shortage will develop here during the course of the next 60 days, and foundry interests are endeavoring to prepare for it. Quotations from the Connellsville district are \$2.25 and \$2.50 for foundry coke, at oven, for this year's delivery. Heavy melting steel scrap is more freely offered, several large interests evidently having satisfied their immediate needs and withdrawn from the market.

Rogers, Brown & Company in their special report for the Industrial World, say:

The promise last week for buying during September has more than been fulfilled. Most of the tonnage inquired for was purchased and in this territory several companies came into the market unexpectedly, bought quickly and are now satisfied that they did the best they could after waiting possibly a month longer than they should. The buying is for all grades, and most of the business done is for the first quarter and first half of 1910. There appears to be a considerable scarcity of some of the lower grades, although demand is of a most general character.

An analysis of the plans that have been made by customers to increase their melting capacity during the next year shows from 10 to 200 per cent more than their largest capacity before. Recent purchases confirm this estimate and many consumers who three months ago were running from hand to mouth are now busy and books well filled.

The railroad buying, after their reserve in placing contracts earlier in the year, has been marked and the orders during the last two months heavy for all kinds of equipment, particularly cars and locomotives. This has had the effect of stimulating certain lines to a point where they have not been for the past two years.

The coke market is, at least in an excited condition and prices are firm with advancing tendency. There have been advances in several districts and, what with the shortage of labor that is hampering the output very seriously, the impending car shortage and approach of the worst season of the year, further advances are looked for soon. The demand for furnace coke is heavy and some large purchases have been made.

Coke Market Still Bullish; Production Passes 420,000 Tons.

CONNELLSVILLE—The total number of ovens in blast in the upper and lower Connellsville regions during the week ending September 4, according to the Courier's figures, was 32,474 with 6,084 idle. For the week ending Saturday, September 4, a record run of 421,320 tons was made as compared to 416,354 tons the previous week. The number of ovens in blast over the previous week shows a gain of 343 ovens. These gains were made by the firing of the following plants of the Frick Company: Adelaide, 25 ovens; Hecla No. 3, 50; Phillips, 50; Redstone, 46; Southwest No. 1, 50; Southwest No.

2, 50; Juniata, 25, and Footedale, 25. At the same time the following ovens went out of blast: Century, 18; at Colonial No. 3, 20; at Genuine, 8, and at Searight, 5. The net increase of active ovens was 343.

The market is bullish and strong. Furnace coke is being quoted at \$2 and \$2.25 per ton, and there is a demand for it, especially among brokers who appear to have contracts in sight. Foundry coke is firm at \$2.35 and \$2.50 with a smaller amount being produced on account of the greater production of furnace coke.

The Frick Company continues to maintain a steady run with increasing even capacity each week. The maximum of production is not being received from all the ovens owing to the small charges that are made, but with improved labor conditions this will be eliminated.

George B. Irvin, secretary of the Coke Producers' Association, in his weekly report, says:

Production last week is estimated at 413,000 tons, an increase of about 10,000 tons over the preceding week. Owing to the continued shortage of miners, many plants are not getting the full production from their ovens and unless there is considerable improvement in the supply of diggers, it is very likely that the number of active ovens will not be materially increased until the required labor is more plentiful.

The recent sale of their spot coke by two local manufacturers at \$2.25 per ton for a short period fixes the minimum of price for furnace grade of standard for the present at least, but none of the independent companies have any stock and the labor shortage prevents increasing their output to any great extent, so it is likely that more than the price named for spot coke will be asked by those of the companies who are in a position to supply it.

Shipments via the three railroads to Pittsburgh and points west last week were 12,326 cars, or 30 more than the week before. The number of standing unconsigned loads are so few as not to be worth taking into consideration.

STEEL THE SOLUTION OF THE RAILROAD TIE PROBLEM.

A great many railroad wrecks are caused by defects that are overlooked by those who are designated to account for them, says George M. Cote, of the George M. Cote Lumber Company, Pittsburgh, Pa. He then goes on:

For illustration, we will call the butt of an oak tree the south end and the top the north end. The butt log is solid and compact, and contains the best lumber in the tree. This is because the tree, while growing, has the weight of the tree on the butt, which makes it compact, hard and solid. The second log, while not so tough and compact, still has the weight of the top log and the branches, and contains good lumber. The

top log, or the log that railroad ties are made from, only has the weight of the branches and, as we all know, the sap in a tree goes to the top which makes this log soft, sappy and brash. The farther towards the top the softer and sappier the log. Now what have we in tie timber? One end of the tie is softer than the other end; that is to say, the north end of the tie is softer than the south end.

Lay these ties in a track and what is the result? There is not one in one hundred railroad track foremen or supervisors, even engineers, who can tell the north from the south end of a sawn tie. They can, if careful, tell a hewn tie; but what foreman on any railroad can do this? The ties are put in the track as they come, some north ends of the ties to the right and some the reverse.

The present weight of 50-ton capacity cars, built up high and top-heavy run over these north-end ties will cut in and cause the tie-plate to sink in on the north end faster than on the south end, or harder part, of the tie. This will cause a vibration at the wheel base, the vibration increasing as you go up the car, so that, by the time you reach the top, it has a large swing back and forth. The motion of the train also helps to keep up and increase this swinging motion at the top. What railroad man has not noticed the rolling of a heavy loaded train?

There have been accidents that were due to this cause. Lumps of coal have been thrown off and passengers killed by passing trains. Cars standing on switches, although back of the safety post, have been side-swiped and wrecked, or caused the train to be wrecked, and the belief has been that the car was not in on the switch far enough when this was not the case. Many trains, in passing each other, have been wrecked by the rocking of the cars and the tops striking together, and when an expert is sent to find the cause, he reports, after finding a broken axle or wheel caused by the wreck, that that was the cause, when, in reality, it was caused by the rocking of the cars.

The tie plate now used is a help for a short time, say, six months, on a new tie, when it commences to cut in, and, although ever so small, it starts the vibration and gets worse and worse day by day.

The railroads are now talking "Creosoting" ties, but this will only make the matter worse; because when you creosote a tie you take the life out of the lumber. While it will preserve the wood from rotting, it makes the tie softer, and the rail will cut in faster. White and Rock oak ties cannot be creosoted—only the soft woods. The solution is the all-steel tie.

Range of Weekly Quotations of Pig Iron

PIG IRON

	Sept. 11.	Sept. 4.	Aug. 21.	Aug. 21.	Aug. 14.	Aug. 7.	July 31.
At Pittsburgh—							
Bessemer	17.90	17.65@17.90	17.40@17.65	16.90@17.40	16.90	16.90	16.40@16.90
Basic	16.65@16.90	16.40@16.90	16.40@16.90	16.15@16.40	16.15@16.40	16.15@16.40	15.90@16.15
No. 1 Foundry	17.15@17.65	16.90@17.40	16.90@17.40	16.90@17.15	16.90@17.15	16.90@17.15	16.40@16.65
No. 2 Foundry	16.65@16.90	16.40@16.90	16.40@17.15	16.15@16.65	16.15@16.65	16.40@16.65	15.90@16.15
Malleable Bessemer	17.15@17.40	16.65@16.90	16.65@16.90	16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15
Gray Forge	15.90@16.15	15.65@15.90	15.65@15.90	15.15@15.65	15.15@15.65	15.40@16.15	14.90
Low Phosphorus	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90
Ferro Silicon, 50 per cent	64.00@66.00	64.00@66.00	64.00@66.00	64.00@66.00	63.50@65.00	67.00@68.00	67.00@68.00
Ferro Silicon, 10 per cent	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	23.50@24.50	23.50@24.50
Silicon Spiegel, 10 to 12 per cent ..	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	32.00@33.00	32.00@33.00
Spiegeleisen	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00
Ferro Manganese	44.45@45.45	43.95@44.95	43.95@44.95	43.45@44.45	42.95@43.95	43.45@43.95	43.45@43.95
At Virginia Furnaces—							
Basic	15.50@16.50	15.50@16.50	14.50@15.50	14.25@14.75	12.75@13.00	12.75@13.00	12.75@13.00
No. 1 X	16.50@17.00	16.50@17.00	15.00@15.50	15.00@15.50	14.50@15.00	14.50@15.00	14.50@15.00
No. 2 X	15.50@16.00	15.50@16.00	15.00	14.50@15.00	14.00@14.50	14.00@14.50	14.00@14.50
No. 2 Plain	15.00	15.00	14.00@14.50	13.75@14.50	13.25@13.75	13.25@13.75	13.25@13.75
Gray Forge	14.50@15.00	14.50@15.00	14.00@14.75	13.00@13.50	12.75@13.00	12.75@13.00	12.75@13.00
At Birmingham—							
No. 1, Foundry	14.50	14.00	14.00	13.50@14.00	13.00@13.50	12.50@13.00	12.50@13.00
No. 2, Soft	14.00	13.50@14.00	13.50@14.00	13.50	13.00@13.50	12.50@13.00	12.50@13.00
No. 2, Foundry	14.00	13.50@14.00	13.50@14.00	13.50	13.00@13.50	12.50@13.00	12.50@13.00
No. 3, Foundry	13.00@13.50	12.50@13.50	12.50@13.50	12.00@13.00	12.00@12.50	11.50@12.00	11.50@12.00
No. 4, Foundry	11.50@12.00	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50
Gray Forge	13.00@14.00	12.00@13.50	12.00@13.50	11.25@11.75	11.25@11.75	10.75@11.00	10.75@11.00
At Philadelphia—							
No. 2X Foundry	17.75@18.25	17.50@18.00	17.00@17.50	17.00@17.50	17.00@17.50	16.50@17.00	16.50@17.00
Basic	18.00@18.50	18.00	17.00@17.50	17.00@17.50	17.00@17.50	15.50@15.75	15.50@15.75
Gray Forge	16.75@17.25	16.50@16.75	16.00@16.50	16.00@16.50	16.00@16.50	15.25	15.25

STEEL.

Tons of 2,240 lbs., at Pittsburgh—							
Bessemer Billets	25.00@25.50	25.00@25.50	24.00	24.00	24.00	24.00	24.00
Open Hearth Billets	26.00@27.00	26.00@27.00	26.00	26.00	26.00	26.00	26.00
Forging Billets	29.00@30.00	29.00	28.00	28.00	28.00	28.00	28.00
Sheet and Tin Bars	26.00@27.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00
Bessemer Steel Rails	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Open-Hearth Steel Rails	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Light Steel Rails—							
25 to 45 lbs.	28.00	28.00	28.00	28.00	28.00	28.00	27.00
16 and 20 lbs.	29.00	29.00	29.00	29.00	29.00	28.00	27.00@28.00
12 and 14 lbs.	30.00	30.00	30.00	30.00	30.00	30.00	29.00
8 lbs.	31.00	31.00	31.00	31.00	31.00	30.00	29.00@30.00
Bessemer Wire Rods	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Open-Hearth Wire Rods	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Muck Bar, all pig iron	27.00	27.00	27.00	27.00	27.00	27.00	27.00

FINISHED PRODUCTS.

Tons of 2,000 lbs., at Pittsburgh—							
Skelp Steel Grooved	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00
Skelp Steel Sheared	28.00@29.00	28.00@29	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00
Railroad Spikes	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00
Sheets, No. 28	44.00	44.00	44.00	44.00	44.00	44.00	44.00
Galvanized Sheets, No. 28	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Beams, 3 to 15 inches	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00
Beams, over 15 inches	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00
Channels, 3 to 15 inches	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00
Channels, over 15 inches	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00
Tees, 3-inch and larger	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00
Zees, 3-inch and larger	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00
Angles, 3 to 6 inches	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00
Angles, over 6 inches	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00
Tank Plate	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	27.00@28.00
Boiler Plate	30.00	30.00	30.00	30.00	30.00	30.00	29.00@30.00
Hoops	30.00	30.00	30.00	30.00	30.00	30.00	29.00@30.00
Bands	24.00	24.00	24.00	24.00	24.00	24.00	23.00@24.00
Bessemer Steel Bars	27.00@28.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00
Open-Hearth Steel Bars	27.00@28.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00
Common Iron Bars	30.00	30.00	30.00	30.00	29.00	29.00	20.00

and Various Finished Iron and Steel Products.

July 24	July 17.	July 12	July 5.	June 27	June 21.	June 14.	June 7	May 29.	1908 Sept. 12.
16.40@16.90	16.40	16.15@16.40	16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15
15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.15@15.40	15.15@15.40	15.15@15.40
16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.15@16.40	15.90@15.16	15.90@16.15	15.90@16.15	16.15@16.40
15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.40@15.65	15.40@15.65	15.65@15.90
15.90@16.15	15.90@16.15	15.90@16.15	16.15@16.40	15.90@16.15	15.65@15.90	15.50@15.65	15.40@15.65	15.40@15.65	15.40@15.65
14.90	14.90	14.65@14.90	14.90@15.15	14.90@15.15	14.90@15.15	14.50@14.65	14.50@14.65	14.50@14.65	14.40@14.65
20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	15.90@20.00	19.50@20.00	19.00@19.50	19.00@19.50	19.00@19.50	21.25@21.75
62.00@63.00	62.00@63.00	63.00@64.00	63.00@64.00	61.00@62.00	62.00@64.00	61.00@62.00	61.00@62.00	63.00@70.00	69.00@70.00
24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	25.00	26.50@27.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	33.50@34.00
29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	31.00@31.50
43.45@43.95	43.45@43.95	42.95@43.95	42.95@43.95	41.95@42.45	42.45@42.95	42.45@42.95	42.45@42.95	42.45@42.95	45.00@46.00
12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.50@12.75	12.50@12.75	13.75@14.25
14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.25	14.00@14.25	14.25@14.75
14.00	14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.50@13.75	13.50@13.75	13.75@14.25
13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.50	13.25@13.50	13.25@13.75
12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.50@12.75	12.00@12.25	12.00@12.25	12.25@12.75
12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	12.00@12.50	11.75@12.00	11.75@12.00	11.75@12.00	11.50@12.00	13.00@13.50
12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.50@11.75	11.50@11.75	11.50@11.75	11.25@11.50	13.00@13.50
12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.25@11.50	11.25@11.50	11.25@11.50	11.00@11.50	12.50@13.00
11.50@12.00	11.50@12.00	11.50@12.00	11.00@11.50	11.00@11.50	10.75@11.00	10.75@11.00	10.75@11.00	10.50@11.00	12.00@12.50
11.00@11.50	11.00@11.50	11.00@11.50	10.50@11.00	10.50@11.00	10.25@10.50	10.25@10.50	10.25@10.50	10.00@10.50	11.50@12.00
10.75@11.00	10.75@11.00	10.75@11.00	10.50@10.75	10.50@10.75	10.25@10.50	10.25@10.50	10.25@10.50	10.00@10.50	10.75@11.25
16.00@16.50	16.00@16.50	16.50@16.75	16.50@16.75	16.75@17.00	16.75@17.00	16.75@17.00	16.75@17.00	16.75@17.00	16.50@17.00
15.50@15.75	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.25@15.50
15.25	15.25@15.50	15.25@15.50	15.25@15.50	15.25@15.50	15.25@15.50	15.00@15.25	15.00@15.25	15.00@15.25	15.25@15.50

23.00@24.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	25.00
25.00@26.00	24.00@25.00	24.00@25.00	23.50@24.00	23.50@24.00	23.00@24.00	23.00	23.00	23.00	25.00
28.00	26.00@28.00	25.00@27.00	25.00	25.00	25.00	25.00	25.00	25.00	27.00
25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	25.50	27.50
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.00
27.00	27.00	25.50@27.00	25.50@27.00	25.50@27.00	26.00@27.75	26.00@27.75	25.00@27.75	25.00@27.75	23.00@25.00
27.00@28.00	27.00@28.00	26.50@27.00	26.50@27.00	26.50@27.00	26.75@27.75	26.75@27.75	26.75@27.75	26.75@27.75	24.00@26.00
29.00	29.00	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.00@28.00
29.00@30.00	29.00@30.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	31.00@32.00
29.00@30.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	33.00
29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	30.00	30.00	34.00
27.00	27.00	27.00	27.00	27.00	27.00	25.00	25.00	25.00	25.50

26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	29.00@30.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	30.00@32.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	34.00@36.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	50.00
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	71.00
27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	26.00	26.00	26.00	26.00	32.00
29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	26.00	26.00	26.00	26.00	32.00
29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
28.00@29.00	28.00@29.00	27.00@28.00	27.00	27.00	27.00	27.00	27.00	27.00	33.00
28.00@29.00	28.00@29.00	27.00@28.00	27.00	27.00	27.00	27.00	27.00	27.00	32.00
27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	26.00	26.00	26.00	26.00	32.00
29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	26.00	26.00	26.00	32.00
29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	28.00	34.00
29.00@30.00	29.00@30.00	29.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	36.00
23.00@24.00	23.00@24.00	23.00@24.00	24.00	24.00	24.00	24.00	24.00	24.00	28.00
25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	28.00
25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00	24.00	28.00
29.00	29.00	28.00@29.00	29.00	29.00	29.00	26.00@27.00	26.00@27.00	26.00@27.00	28.00

STEEL PLATES.

Base prices, tank quality, ¼-in. thick,
per 100 lbs., f. o. b., Pittsburgh:
6¼ to 100 inches wide\$1.30

Extras over base price—	
3-16 inch thick .....	.10
Gauges 7 and 8 .....	.15
Gauge 9 .....	.25
Gauges 10 and 11 .....	.25
Circles .....	.20
Sketches .....	.10
Boiler and Flange quality .....	.10
Marine Steel .....	.40
Widths over 100, to 110 in .....	.05
Widths over 110, to 115 in .....	.10
Widths over 115, to 120 in .....	.15
Widths over 120, to 125 in .....	.25
Widths over 125, to 130 in .....	.50
Widths over 130 in	1.00

IRON AND STEEL SCRAP.

Old steel rails, re-rolling..	\$17.50	
Old steel rails, remelting..	16.50	17.00
Steel axles	20.00	20.50
Heavy melting scrap	16.50	17.00
Low phosphorus	20.00	21.00
Sheet scrap	15.00	15.25
No. 1 wrought scrap	17.00	17.50
Machine shop turnings ..	12.00	12.50
Cast borings	10.00	10.50
No. 1 cast	15.25	15.75
Old car wheels	16.25	16.50
Old iron rails	18.50	19.00
Axle turnings	13.50	14.75
Railway malleable	15.50	16.00

TIN AND TERNE PLATES.

Official prices, f. o. b., Pittsburgh—
Coke tins:

14x20, I. C.	\$3.55
14x20, 100 lbs.	3.40
14x20, 95 lbs.	3.35
14x20, 90 lbs.	3.30

Charcoal tins:

A. Grade, 14x20, I. C.	4.15
A. Grade, 14x20, 100 lbs.	4.00

Ternes:

20x28, I. C.	6.80
20x28, 200 lbs.	6.50

STEEL RAILS.

Fifty pounds and Heavier—

500-ton lots and over	\$28.00
Car load lots	30.00
Less than car load lots	32.00

Light Rails—

12 and 14 pounds	\$30.00
16, 20 and 25 pounds	28.00
30 and 35 pounds	28.00
40 and 45 pounds	28.00

Relaying Rails

Subject to inspection, f. o. b. Pitts-
burgh:

Stand'd 50 lbs. & heavier..	\$22.00	\$22.50
25 to 40 lbs.	23.00	23.50
16 to 20-pound rails	24.00	24.50
12-pound rails	25.00	25.50

STEEL SHEETS.

Official prices, per 100 lbs., f. o. b.,
Pittsburgh—
Gauge.

	Black.	Galv.
30	\$2.35	\$3.60
29	2.25	2.35
28	2.20	3.25
27	2.15	3.05
25-26	2.10	2.85
22-24	2.05	2.65
17-21	2.00	2.50
15-16	1.95	2.40
13-14	1.90	2.30

Blue Annealed.

10 and heavier	\$1.65
11-12	1.70
13-14	1.75
15-16	1.85

Corrugated Roofing.

Per square, 28 gauge, f. o. b. Pitts- burgh—	
Painted	\$1.55
Galvanized	2.80

WIRE AND NAILS.

Prices to jobbers in car load lots, per
100 lbs.; retailers 5 cents additional:

Wire nails	\$1.80
Plain wire	1.60
Painted barb wire	1.80
Galvanized wire	2.10

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per
cent pure are held at 24c per pound in
ton lots.

For small lots of 100 pounds and over
advances of 3c per pound are charged.

Rods and wire.....base price 32 cents
Sheetsbase price 34 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

	Per Ton.
Mine-run	\$1.10@1.20
¾-inch lump	1.20@1.30
1¼-inch lump	1.30@1.40
3-inch lump	1.55@1.65
1¼-inch nut	1.10@1.20
¾-inch slack .....	.55@.65

At Buffalo—

	Pgh.	Frep't
Mine-run	\$2.35	2.05
¾-inch lump	2.45	2.15
1¼-inch lump	2.55	2.25
¾-inch slack	1.85	1.70

At Cleveland—

	Pgh.	No. 8
Mine-run	\$2.10	\$1.80
¾-inch lump	2.20	1.90
1¼-inch lump	2.25	2.00
1¼-inch nut	2.10	1.80
¾-inch slack	1.55	1.45

At Detroit—

	Pgh.	No. 8
Mine-run	\$2.50	\$2.05
¾-inch lump	2.60	2.15
1¼-inch lump	2.70	2.25
1¼-inch nut	2.50	2.05
¾-inch slack	2.00	1.65

At Chicago—

	Pgh.	No. 8
Mine-run	\$3.00	\$2.55
¾-inch lump	3.10	2.65
1¼-inch lump	3.20	2.75
1¼-inch nut	3.00	2.55
¾-inch slack	2.45	2.25

MERCHANT PIPE.

Base discounts, car load lots, subject
to one point and 5 per cent extra to
large jobbers.

	Steel	Black.	Galv.
¾ and ¼-inch .....	.72		56
¾-inch .....	.73		59
½-inch .....	.76		64
¾ to 6-inch .....	.80		70
7 to 12-inch .....	.75		60
Extra strong plain ends—			
¾ to ¾-inch .....	.65		53
½ to 4-inch .....	.72		60
4½ to 8-inch .....	.68		56
Double extra strong—			
½ to 8-inch .....	.61		50

WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe
car load prices to consumers; prices to
jobbers one point and 5 per cent.

¼-inch .....	.69	
¾ and ¾-inch .....	.70	56
½-inch .....	.73	61
¾ to 6-inch .....	.77	67
7 to 12-inch .....	.72	57

Extra Strong and Plain Ends—

¾, ¼ and ¾-inch .....	.62	50
½ to 4-inch inclusive .....	.69	57
4½ to 8-inch, inclusive65	53

Double Extra Heavy plain Ends—

½ to 8-inch, inclusive58	47
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BOILER TUBES.

	Steel	Iron.
1 to 1½ inches50	45
1¾ to 2¼ inches62	45
2½ inches64	50
3¾ to 5 inches .....	.70	57
6 to 13 inches .....	.62	45

Less than car load lots, two points less.

2½ inches and smaller, over 18 feet, 10
per cent, net extra.

2¾ inches and larger, over 22 feet, 10
per cent net extra.

MERCHANT STEEL.

Cold rolled and ground shafting, 60
per cent off, car load lots; 56 per cent
off less than car load lots; delivered in
base territory:

Planished Tire Steel	\$1.40@1.50
Iron finish, up to 1½x½ in. ..	1.35@1.45
Iron finish, 1½x½ in. and over	1.20@1.30
Toe Calk Steel	1.70@1.80
Railway Spring Steel	1.75@1.85
Cutter Shoe	1.95@2.05
Flat Sleigh Shoe	1.55@1.65
Crucible Tool Steel	7.00@8.00
Open-Hearth Spring Steel ..	2.05@2.30

Freight Rates On Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig Iron, from Virginia furnaces to Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	\$2.35	\$3.60	\$3.20	\$2.35	\$3.30	\$3.35
Bristol		3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.35	3.60	3.20	3.00	3.95	4.00
Kayula, Ivanhoe, Rural Retreat ...	2.35	3.60	3.20	3.40	4.35	4.40
Pulaski, E. Radford, Max Meadows. 2.90	2.35	3.60	3.20	3.25	4.20	4.25

Pig Iron from Birmingham, Ala., tons of 2,240 lbs. to—

Boston, by water	\$4.60
Chicago	4.35
Cincinnati and Ohio River	3.25
Cleveland	4.35
Milwaukee and Northwest	4.75
New York, all rail	5.95
New York, rail and water	4.25
Philadelphia, all rail	5.00
Philadelphia, rail and water	4.00
Pittsburgh	4.90
St. Louis	3.75

To Pittsburgh from—

Dunbar Furnaces .....	.85
Kittanning Furnaces .....	.60
Scottdale Furnaces .....	.85
Valley Furnaces .....	.90
Wheeling .....	.90
Valley Furnaces to—	
Cleveland .....	.90

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	Billets.
Baltimore	\$2.15	\$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville .....	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va. ....	.90	1.00
Youngstown .....	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango Valleys ..	1.00	
Wheeling	1.00	

COKE.

From Connellsville region, per 2,000 pounds to—	
Boston	\$3.50
Buffalo	1.00
Baltimore	2.15

FINISHED PRODUCTS.

Finished Steel Products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire, nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—

Albany .....	.16
Buffalo .....	.11
Boston .....	.18
Baltimore .....	.14½
Canandaigua .....	.13½
Cleveland .....	.10
Columbus .....	.12
Cincinnati .....	.15
Chicago .....	.18
Harrisburg .....	.14½
Louisville .....	.18
New York .....	.16
Norfolk .....	.20
Philadelphia .....	.15
Rochester .....	.11½
Richmond .....	.20
Scranton .....	.15
St. Louis .....	.23
Washington .....	.14½

To Pittsburgh from—

Mahoning and Shenango Valleys..	.05
Wheeling .....	.05

COAL.

Coal Rates from Mines—

To Ashtabula	\$1.00
To Allegheny, Pan'dle Ft. W. trk...	.43
To Allegheny, West Penn tracks...	.48
To Allegheny, B. & O. ....	.35
To Pittsburgh, P. R. R. Main Line..	.43
To Pittsburgh, B. & A. V. Div...	.48
To Pittsburgh, B. & O. ....	.33
To Valleys .....	.70
To Buffalo	1.25
To Cleveland	1.00
To Detroit	1.40
To Chicago	1.90
To New York, gross ton	2.25
To Philadelphia, gross ton	2.00

From Freeport—

To Buffalo	1.10
For Lake Shipments— Cargo. Fuel.	
To Ashtabula .....	.88 .98
To Cleveland .....	.88 .98
To Erie .....	.88 .98

West Virginia rates from mines—

To Chicago	1.90
To seaboard points, gross ton	1.80

From No. 8, of Ohio—

To Cleveland .....	.90
To Chicago	1.65
To Detroit	1.14

TIN PLATE.

	C.L.	L.C.L.
Per 100 lbs., Pittsburgh to—		
Boston, Mass.	18	21
Albany, N. Y.	16	19
Baltimore, Md.	14½	17½
Birmingham, Ala.	41	68
Cleveland, O.	10	13
Columbus, O.	12	15
Cincinnati, O.	15	18
Concord, N. H.	18	21
Charlotte, N. C.	39	61
Charleston, S. C.	33	70
Charleston, rail and water..	23½	31
Covington, Ky.	15	18
Chattanooga, Tenn.	33	65
Chicago, Ill.	18	21
Canadaigua, N. Y.	13½	16
Des Moines, Ia.	37½	48½
Detroit, Mich.	15	18
Denver, Mich.	84	118
Dover, Del.	17	20
Buffalo, N. Y.	11	13
East St. Louis	22½	26
Hartford, Conn.	18	21
Indianapolis, Ind.	17	19½
Louisville, Ky.	18	21
Montpelier, Vt.	21	24
Minneapolis, Minn.	32	42
New York	16	19
Norfolk, Va.	20	24
Natchez, Miss.	32	61
Portland, Me.	18	21
Providence, R. I.	18	21
Philadelphia, Pa.	15	18
Richmond, Va.	20	24
Rochester, N. Y.	11½	13½
Syracuse, N. Y.	13½	16
St. Louis, Mo.	22½	26
Terre Haute, Ind.	18	21
Topeka, Kas.	54½	68
Trenton, N. J.	16	19

Low Point in Locomotive Building; Auto Business Saves Year's Dividend

HEAVY LOSS IN EARNINGS SHOWN IN COMPANY'S FIS- CAL REPORT—MOTOR CAR DE- MAND PREVENTED PASSING OF DIVIDEND.

Retrenchments by the railroads in the business depression reduced the output of the American Locomotive Company to the lowest point in its history for the fiscal year ended June 30, according to the company's annual report, made public September 4. At times the production fell to less than 17 per cent of the normal. The company paid the regular dividends on its preferred stock amounting to \$1,750,000, but failed to earn them, the deficit so caused being \$762,861 as compared with a surplus remaining the previous year of \$2,776,784 applicable for dividends on the common stock. These figures are the more interesting because the concern sold \$5,000,000 of notes last week, of which \$1,500,000 were to provide "additional working capital." The proceeds from \$3,500,000 are to be used in enlarging several plants.

The annual report acknowledges that orders were taken on a small margin of profit to keep the plants running and preserve the organization, and it also says that the sale of automobiles greatly increased. The gross receipts were only \$19,008,634 as compared with \$37,484,417 in 1908 and \$49,515,486 in 1907.

The report does not show what part of this should be credited to the automobile branch. As the automobile business improved the locomotive business must have been small in comparison with the years when the motor car was not much of a factor in the company's business. At the offices of the company all information regarding the proportion of the two branches of the business was refused.

Though the profit and loss surplus was cut down by \$762,861 in paying the unearned dividends it still stands at \$7,706,351, and the assets include \$4,672,041 in cash, so the finances of the company are in shape to enable it to take advantage of improved business conditions without further borrowing operations. Advantage was taken of the period of inactivity to repair and improve the equipment of the shops and \$816,588 was spent for 130 acres of land at Gary, Ind., where a new plant will be erected.

W. H. Marshall, president of the company, says in his report that while the business of the country is rapidly resuming normal proportions, the locomotive business, because of its nature, will

be among the last to enjoy complete restoration. He continues:

Orders were taken on small margin of profit in an effort to keep the plants running and preserve, as far as possible, the organization so that the manufacturing operations would not suffer from disorganized and inexperienced forces upon the restoration of business. The small margin of profit and the fact that production at its lowest was only about 17 per cent of normal, explain the large percentage of expenses to gross earnings and the deficit after the payment of the preferred dividend.

Advantage was taken of the period of inactivity in the shops to install additions to and betterments of plant equipment and methods, which, with the purchase of land at Gary, Ind., for a new plant, amounted to \$816,587, thereby reducing the balance last year in the extraordinary additions and betterment fund from \$1,989,085 to \$1,172,497.

Plans have been prepared and contracts made for extensive improvements at the larger works, at Schenectady, Dunkirk, Pittsburgh and Richmond. This will result in a largely increased capacity even after the contemplated permanent shut-down of the smaller and less economical plants. A reduction in the manufacturing costs is expected as a result of this policy of concentration in a few large plants of the entire locomotive output of the country.

This plan also includes the transfer to the Rogers works in Paterson, N. J., of the manufacture of steam shovels and small contractors' locomotives heretofore built at Richmond, Va., and Scranton, Pa., respectively. The Rogers works is being rearranged and equipped solely for the manufacture of such product.

In the year the sales of automobiles have greatly increased, and the results in the operation of the automobile department have been so satisfactory as to warrant a further increase in the capacity of the Providence factory, which has been accomplished largely by remodeling a number of adjacent buildings abandoned by the locomotive plant when it was shut down last year.

Locomotives for 1910.

Division officials of the Pennsylvania railroad system have been requested by the executive officers in Philadelphia and Pittsburgh to prepare estimates of the motive power requirements for 1910. This is the first time in years that division officials have been requested to furnish estimates so far in advance and it is taken as an indication that the executives believe the orders must be placed as soon as possible to assure prompt delivery next spring.

Contracts for the locomotives for both freight and passenger service, will be awarded as soon as the estimates are compiled. It was stated that, while a large number of the engines would be built at the company's shops, each of the larger locomotive builders will receive a

portion of the order. This means that the company's erecting shops will be operated to capacity for the remainder of this year and for the greater portion of 1910.

Officials announce that the use of heavier locomotives on all parts of the system will mean the rebuilding of certain portions of the main and branch lines. A few branch road tunnels will be removed and steel bridges will replace wooden structures to permit the use of the new motive power. It is expected that some of the contracts for new engines will be awarded about October 1.

NEW SIGNAL TESTS.

Railroad Officials Watch Operation of New Device at Scranton.

In the presence of a number of prominent railroad men, representing a half dozen roads, practical tests were made at the Touhill Iron Works, at Scranton, Pa., on September 4, of the recently invented Cassale electric signal system.

The system is claimed to be safer and more perfect than anything now in use. By an auxiliary third rail arrangement at the block signals if another train is within a certain distance the steam in the engine would automatically be turned off and the air-brakes applied, stopping the train at once.

The new arrangement also provides for telephonic connection between the engine or any other part of the train and any point along the road.

Those who saw the working model were quite pleased with it. The representatives will make a special report to the heads of their respective roads and it is possible that one or more of the roads will adopt the system.

Among those present to witness the exhibition were: T. A. Jones, civil engineer of the Pennsylvania road; Superintendent W. H. Hagan, of the C. R. R. of N. J.; M. Finnerty, superintendent of signal service; Division Superintendent W. H. Shepherd; Mr. Smith, of the signal department, and Mr. Shoemaker, of the New York office, all of the Lackawanna railroad; Superintendent Moon, Chief Clerk Dampman and H. H. Lewis, signal engineer, of the Lehigh Valley; A. H. Rudd, signal engineer of the Pennsylvania railroad.

There were also representatives of the New York Central, the Delaware & Hudson, the Erie and other railroads among those present.

Trolley Signals Under Fire.

The Pennsylvania Railroad Commission is considering a communication from a resident of Pittsburgh complaining of the almost utter lack of protective signal arrangements on the suburban

trolley lines of the State and asking that the matter be taken up and something done. It is brought further to the attention of the commission by the fact that two bad accidents have occurred on suburban trolley lines within the past week, one near Wilkes-Barre and one near Pittsburgh, both by reason of lack of signaling arrangements.

The commission is aware of the fact that on the suburban lines cars are sent along between towns at as high a rate as 40 miles an hour, the lines being equipped with the simplest signaling apparatus that is liable to get out of order at any time. An illustration of what is likely to happen under those conditions is given in the case of a Western Pennsylvania road which connected two towns and which ran its cars closely following each other. A trolley pole broke on a car and all the lights went out—it was midnight and it was all the frightened passengers could do to induce the conductor to go back with a lantern and flag any approaching car. When he went back he stopped a car within 40 yards, which would certainly have crashed into the crippled car.

The informal complaint may lead to an investigation into the signal devices used by interurban trolley lines.

Reading Adopts Composite Telephone.

Following the Pennsylvania and the Erie railroads and other large roads, the Philadelphia & Reading has adopted the new device for the transmission of routine messages known as the composite telephone system, which permits the use of the telegraph lines for telephone communications simultaneous with the use of the same lines for telegraphic transmission.

The system was installed by the Western Electric Company on the Morse wires between Cressona and Ellendale Forge, on the Schuylkill & Susquehanna branch. Seven telephone and three intermediate telegraph stations are equipped. The apparatus is not designed for the dispatching of trains but for the handling of local routine communications. At each station the standard Western Electric composite telephone apparatus is connected up through the Morse wires.

The addition of the composite telephone has no effect on the telegraph service. By the use of retardation coils at the terminal telephone stations, the telephone or voice current is confined to that portion of the line on which the telephone sets are located.

Signal Wire Specifications.

The Pennsylvania Railroad Company's recently adopted specifications for insulated signal wires and cables follow

quite precisely the specifications of the Railway Signal Association, with proper exceptions made to provide for the use of kerits insulation. The Railway Signal Association avoids in the specifications the mention of a proprietary name and by indirection, excludes it.

FIRST CAR COUPLER.

Danville, Pa., Man Given Credit for the Original Device.

According to a recently published bit of history, written for a Buffalo, N. Y., paper, Danville, Pa., claims the distinction of being the home of the inventor of both the "T" rail and the car coupler.

Joseph Miller, according to this unknown author, was born in Danville, Pa., of Quaker parents. When he was 15 years of age the family removed to Belfast in Allegany county, where his father was employed as a millwright. Joseph worked with his father and learned the trade, but his mind wandered away from saw and grist mills and he became a machinist. Like many other men of genius he was sadly deficient in financial ability. One who knew him has remarked: "He was of a confiding nature, trusted everybody and everybody beat him." He died at the age of 92 years and is buried in Mt. View cemetery at Olean, N. Y.

He invented the car coupler in 1854, soon after the Erie railroad was completed. This coupler has been in use ever since. Miller secured a patent on his coupler. He sold it to the State of Massachusetts for one hundred dollars and that is all he ever realized on his valuable invention. Ezra Miller, who by the way, was no relative of Joseph's, invented the buffer in 1868. Joseph Miller's patent expiring Ezra Miller made use of it and "Miller's coupler, buffer and platform," has become a familiar legend to millions.

Miller made many other inventions, among them being an improvement in brick manufacturing machinery, the principle of which is employed in modern brick machines. He invented an improvement in lathes, while employed by a firm which manufactured screw stump machines. By his invention two screws could be made in a day, where before it had taken two days to make one. He was a pioneer in the invention of mowing machines and was interested in aerial navigation.

Legislating Costs Roads Millions.

A conservative computation discloses the fact that the increased burden due to increases in expenses or reductions in revenues imposed by statutes or by commissions acting under Federal and State regulatory laws cost the railways

of the United States Approximately \$100,000,000 a year."

Publication of this assertion at Chicago is the first gun fired by the Eastern railroads in a campaign of education that has just been started and which may be followed by a general increase in freight rates. The preliminary move was the employment of C. C. McCain, chairman of the Trunk Line Association, to make an exhaustive investigation into the "diminishing purchasing power of railway earnings" and to publish the result broadcast. Results of McCain's work have been published in a pamphlet, with the assurance that the conclusions reached do not necessarily indicate the policy which the roads will follow." It is also asserted that the pamphlet is issued with a view to placing before the public accurate information with respect to a phase of the railway problem not generally understood. It is contended that as the wages of railway labor, prices of railway materials and supplies and prices of commodities carried by the railways and of those produced by the purchasers of transportation have rapidly increased, this is equivalent to a decrease in the value of the money in which railway charges are paid.

Concrete Roundhouse for Union R. R.

Plans have been prepared for a new roundhouse for the Union railroad, which is owned by the United States Steel Corporation. The new roundhouse will be constructed of steel and concrete and will be almost double the capacity of the present building. On account of the increased production of the Steel Corporation's plants in Pittsburgh, which has resulted in much heavier tonnage for the Union railroad, it has been necessary to purchase additional locomotives. The new engines are much larger than those formerly in use and for this reason the new roundhouse has become an absolute necessity. Officials of the road are now selecting a site. This will be the first concrete roundhouse in this section of the country.

Here's a Real Press Agent.

This paragraph was recently sent out from Fairmont, W. Va., to the daily press of Ohio and Pennsylvania:

"The Hampshire & Southern, which is being built from Romney to Petersburg, will open up one of the richest valleys in natural resources to be found in West Virginia. Besides the fertile farming land along the south branch of the Potomac, the hills are covered with fine hardwood timber and are underlaid with almost inexhaustible quantities of limestone and the greatest deposit of rich iron ore to be found south of the Great Lake beds. The land near where the

railroad is to be constructed, already cleared, will be planted in fruit trees. The road, which is to be completed by January 1, will give an outlet to 40,000 people who had little or no railroad accommodations."

HARRIMAN AND GOULD.

Coming Improvements in Wabash Lines in Pittsburgh District.

C. M. Spitzer, of Toledo, a director of the Wheeling & Lake Erie, is reported to have confirmed the rumor that George Gould has decided to make extensive improvements in the Missouri Pacific lines. In response to a question Mr. Spitzer said he understood it was the purpose of the company to expend \$100,000,000 in this way in the next 10 years, or at the rate of more than \$10,000,000 a year. The improvements will include double tracking, substitution of heavy for light rails in certain sections, the rebuilding of many bridges with concrete and iron, and the construction of important extensions.

"At the end of 10 years," said Mr. Spitzer, "the Missouri Pacific undoubtedly will be one of the finest railway systems in the world. I believe, as did Russell Sage, that its future earning capacity is enormous."

"What do you know about Harriman's connection with Gould?" he was asked.

"Harriman is a director in Wheeling & Lake Erie, which is a Gould road, and he is one of seven men who own it. Gould is another of the seven. You have noticed that the Wabash recently has been advertising a through trip to the Pacific coast over the Union Pacific. That fact, I take it, is significant. My understanding is that the Harriman and Gould interests now are working in entire harmony. The Wheeling & Lake Erie will be double tracked, and in connection with the Pittsburgh Terminal road, when reorganized, will continue an important freight route. I believe Harriman's interest in the New York Central is so great that it will be practically from an operating standpoint of the transcontinental system he has in view. Of course there are legal obstacles to the actual consolidation. From my information I should say that the melon to be cut, about which there has been so much talk, is just new working arrangement, the economic benefit of which must be great."

Phelps-Dodge Road Extension.

Papers have been filed at Santa Fe, N. M., by which the El Paso & Southwestern increased its capital stock from \$18,000,000 to \$25,000,000. As the Phelps-Dodge road is a close corporation and has no stock for sale, there is but one

conclusion, and that is that steps are being taken by the Southwestern to extend its line from Benson, Ariz., west either to a connection at Yuma, with the Spreckels road into San Diego, or that it intends to construct its own line all the way into San Diego. A week previously the Harriman interest began to build into Douglass, Bisbee and Naco, Ariz., mining territory heretofore controlled exclusively by the Phelps-Dodge people, and it is generally understood about El Paso that the increasing of the capital stock of the Phelps-Dodge concern means that it is now going to build to the Pacific coast and give the Rock Island a direct outlet to the Pacific as the Rock Island connects with the Phelps-Dodge road at Tucumcari, N. M., and comes into El Paso that way.

Lehigh Valley's New Work.

As fast as its financial position and general condition will permit, the Lehigh Valley will be made a four track road. Between Easton and Slatington, Pa., approximately \$1,000,000 is to be expended for such work, contracts for the same having been recently awarded. In that region there is now about 25 miles of such trackage, and ultimately 60 miles of three track line from Penn Haven will be increased to four tracks. Penn Haven is the junction to Tidewater, a distance of 20 miles. This improvement is necessitated by the heavy freight tonnage from the anthracite regions. Although there are many sidings along the line, freight trains are compelled to afford easy movement for those of the passenger service. This compels them to lose much time due to waits on sidings and it cuts quite a figure in annual operating expenses.

Financing Greene County Road.

A \$1,500,000 mortgage has been filed at Waynesburg, Pa., by the Waynesburg & Monongahela Street Railway Company to cover the property which the new trolley concern has acquired in Greene county. The mortgage is given to the Carnegie Trust Company, of New York, and is to secure the bonds which the company is issuing.

Electrifying New York Roads.

Plans are being made for the electrification of the West Shore Railroad between Syracuse and Rochester, N. Y.; also the Pennsylvania division of the New York Central between Lyons and Geneva, N. Y. This work will necessitate the purchase of considerable power and railroad equipment.

A 41-Carload Auto Shipment.

Recently 123 automobiles were shipped in one trainload from Detroit to Minne-

apolis. The shipment required forty-one 36-foot cars, three automobiles to a car. This is doubtless the largest single shipment to one consignee ever made by an automobile manufacturer.

TURKISH CONCESSIONS.

Proposed American Investments in Railroads and Telephones.

Advices have reached the State Department at Washington from Turkey to the effect that strong efforts are being made by American business men to obtain concessions in Turkey, which will involve the outlay of a considerable sum of money. Since Secretary Knox expressed his intention of assisting American investment in foreign fields these business men, who are interested in the development of the Ottoman Empire, have redoubled their efforts to place their capital.

An American company is endeavoring to secure the concession for a railroad to be built through Asia Minor from Angora to Van, with transverse branches to the Mediterranean. Another American company is endeavoring to secure the concession for building a road from Alexandretta to Aleppo, and thence to the headwaters of the Euphrates. The telephone concession at Constantinople is also being courted by an American company, while still another concern has asked to take over the contract for the entire Ottoman Empire.

New Docks for Cleveland.

The Cleveland & Pittsburgh division of the Pennsylvania Railroad Company has bought "Whisky Island," along Lake Erie, near Cleveland, and will build docks at that point. The railroad paid \$235,000 for the property and it is expected that approximately \$1,000,000 will be expended for the new docks.

Several hundred thousand dollars will be expended for double track work between Pittsburgh and Cleveland, and a portion of the track work will be taken up this year. Last year the Pennsylvania spent about \$500,000 for additional tracks on the Cleveland & Pittsburgh division and executives have been asked to appropriate twice that amount for immediate requirements.

New Laboratory at Altoona.

Work has been started by the Pennsylvania Railroad Company on the erection of an all-steel laboratory at Altoona, and it is announced that the company will build all-steel laboratories at all the principals terminals along that system. The Altoona building will be 36x90 feet. It will be of steel and concrete construction and fireproof.

Plans prepared by the engineering de-

partment show that all fireproof buildings will be divided into three parts, one 40, one 20 and another 30 feet long, and the contents will be classified and placed in the different rooms. Committees are selecting sites for the all-steel and concrete buildings for other terminal points.

DETROIT RIVER TUBE.

Grand Trunk's Rumored Projects.

Detroit, Mich., real estate and railroad people believe that the Grand Trunk has obtained a three year option on valuable land abutting on the river at Walkerville on the Canadian side preparatory to engaging in the building of another tunnel under the Detroit River similar to that of the Michigan Central, and that the Wabash is interested in same. The property in question is said to extend three miles back from the river.

To Eliminate B. & O. Tunnel.

Following a recent inspection of the main line and the Sand Patch, (Pa.) tunnel by officials of the Baltimore & Ohio, the assertion was made that the company will begin work early next spring on main line improvements that will mean an expenditure of about \$4,000,000. Plans for this work, which are in the hands of officials in Baltimore, call for the elimination of the Sand Patch tunnel by constructing a new road through that section of the country.

The Baltimore & Ohio has a traffic agreement with the Wabash, whereby all the eastbound tonnage of the Gould lines is routed over that road to the Western Maryland. During the last year the amount of freight turned over the Baltimore & Ohio by the Gould roads has been almost doubled, and eastbound tonnage over the main line east from Pittsburgh has reached such proportions that the improvements are said to have become an absolute necessity.

It is also stated that the Baltimore & Ohio and Wabash, jointly, will make costly improvements at Bruceton, near Pittsburgh, where all freight between these two roads is interchanged. Until a year or so ago the transfer of freight was made at Toledo, but under the new arrangement the Gould lines get a much longer haul.

West Virginia Traction Plans.

The Fairmont & Northern Traction Company has effected an organization in Fairmont. Directors: C. W. Watson, J. E. Watson, S. L. Watson, A. B. Fleming, J. H. Wheelwright, C. L. Shaver, Van Lear Black, W. Miller and G. T. Watson. The officers of the company

will be elected at a meeting to be held next week. The company was formed with the object of building an electric railway from Fairmont to Fairview, a distance of 15 miles. The survey of the railway has been made and most of the rights of way have been secured.

AMALGAMATED SCALES.

Below is given the official list of iron and steel concerns which have signed the Amalgamated Association scale for the year July 1, 1909, to June 30, 1910. According to the rule, each company signs the entire scale to cover all operations which it may conduct, but as most of the companies are really interested only in one of the scales, the three important scales being the iron scale, the sheet scale and the tin plate scale, we have made an effort to separate the companies according to the character of their output.

Iron Mills—American Car & Foundry Company, Detroit; Brown & Company, Incorporated, Pittsburgh; Cincinnati Horseshoe & Iron Company, Cleveland; Cleveland Hardware Company, Cleveland; Empire Iron & Steel Company, Cleveland; Ewald Iron Company, Louisville; Ft. Wayne Iron & Steel Company, Ft. Wayne; Helmbacher Forge & Rolling Mill Company, St. Louis, and Madison, Ill.; Highland Iron & Steel Company, Terre Haute, Ind.; Interstate Iron & Steel Company, Cambridge, O., and East Chicago, Ill.; Kansas City Bolt & Nut Company, Kansas City, Mo.; Lake Erie Iron Company, Cleveland; Lockhart Iron & Steel Company, McKees Rocks, Pa.; National Rolling Mill Company, Vincennes, Ind.; Ohio Falls Iron Company, New Albany, Ind.; Pittsburgh Forge & Iron Company, Pittsburgh; Railway Steel Spring Company, Detroit, Mich.; Standard Chain Company, Columbus, O.; Texas Rolling Mill Company, Ft. Worth, Tex.; Tyler Tube & Pipe Company, Washington, Pa.; Union Rolling Mill Company, Cleveland; Westerman & Company, Lockport, N. Y.; Republic Iron & Steel Company, Youngstown, Toledo, East Chicago, Massillon, East St. Louis, Moline, Ill.; Alabama Works, Gate City, Ala.

Sheets Mills—American Rolling Mill Company, Middletown, O.; Empire Iron & Steel Company, Niles, O.; Licking Rolling Mill Company, Covington, Ky.; Newport Rolling Mill Company, Newport, Ky.; Thomas Steel Company, Niles, O.; Wheeling Steel & Iron Company, Wheeling; Youngstown Iron & Steel Roofing Company, Youngstown; Zug Iron & Steel Company, Pittsburgh.

Tin Mills—Atlanta Tin Plate & Sheet Company, Atlanta, Ind.; Carnahan Tin Plate & Sheet Company, Canton, O.; Griffiths Charcoal Iron, Sheet & Tin Plate Company, Washington, Pa.; Pope Tin Plate Company, Steubenville, O.; N. & G. Taylor Company, Cumberland, Mr.

Sheets and Tin Mills — Follansbee Brothers Company, Follansbee, W. Va.; National Enameling & Stamping Company, Granite City, Ill., and St. Louis, Mo.; Whitaker - Glessner Company, Wheeling, W. Va., and Martins Ferry, O.

THE ENGLISH GALVANIZING TRADE.

A hostile attitude continues to be manifest by the British trade press against any attempts to revive the galvanized iron combination, the collapse of which caused a decided flurry during the closing days of July. The London "Colliery Guardian" of August 27, says:

All sorts of reports are current respecting the future policy of the galvanizers' combine. Publicity was never a characteristic of the combination even in its palmiest days, and it is impossible to forecast what the future hides for this industry. Some few weeks ago some of the leaders of the trade asserted that the "pooling" of orders among association members continued in force. But this presumably only applied to unexpired contracts, unlimited competition, on the face of it, being quite inconsistent with a "pooling" of orders. Things have been done by the association in the past which would be condemned in no uncertain language by some people—such, for instance, as the buying up and dismantling of iron works which might become the source of raw materials for possible competitors, and the remembrance of drastic proceedings like these may greatly hinder any attempts to bring the trade together again, particularly if it is desired to include new firms who were previously outside the association, and no new combine could possibly have any chance of success which did not number these concerns amongst its membership. In certain circles it is thought that it would not be surprising if two associations were to emerge from the ashes of the old, one for the foreign trade and one for the home trade. Stocks are understood to be heavy in India, and until these are cleared off there will not be much chance of a recovery of values so far as this important market is concerned anyhow.

A more encouraging view is taken of the Welsh tin plate trade. The "Guardian" says:

Although the president of the Swansea Metal Exchange takes rather a pessimistic view of things, it is satisfactory to learn that for the first seven months of this year the exports of tin and black plates and sheets (including galvanized) show an increase of 61,134 tons. Whether this ratio will be maintained seems somewhat doubtful, for there is no gain-saying the fact that foreign companies are doing their best to establish works for the manufacture of tin plates. Hitherto their efforts have not been very successful. In addition to the failure in Canada, we now learn from the British consul in Moscow that a firm who started works there by which they hoped to produce eventually some 16,000 tons of black-plate per annum, failed to take into consideration a very material factor—the Welsh hands. They, being dissatisfied with life in Moscow, cleared out in a body, and the company are now looking out for fresh hands. At the present time there are about 400 tin plate mills at work in Wales, and orders have been coming in so fast the last week or two that both crude and manufactured tin have advanced considerably.

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NEW CONSTRUCTION.

Reading, Pa.—The Gray Iron Foundry Company will erect a galvanizing plant, 26x30 feet.

Reading, Pa.—Hiram P. Yeager, proprietor of the Penn Boiler Works, Reading, has purchased site, 70x100 feet, upon which to construct boiler factory.

Collinwood, O.—John A. Kling and Charles Miller are interested in a company which intends erecting a plant here for the manufacture of refrigerators.

Columbus, Wis.—Plans have been completed by the Badger Motor Car Company for a new building, 50x150 feet.

Denver, Colo.—It is reported that a modern foundry, which will be one of the largest in the west, will be built here by the Enz & Orr Foundry Company, Denver, Colo.

St. Louis, Mo.—The Heine Boiler Company will erect an addition to their plant at 2429 East Marcus avenue, to cost \$25,000.

Milwaukee, Wis.—Plans are being prepared by Architect O. C. Uehling, Wells building, for a two-story concrete steel and brick foundry and refining works, 80x160 feet, for the Progressive Metal & Refining Company. Cost \$15,000.

Detroit, Mich.—The contract for the concrete piling and footings of the warehouse to be erected for the Buhl Heirs, at 115-119 West Woodbridge street, Detroit, has been awarded to the Raymond Concrete Pile Company, of New York and Chicago. John Scott & Company are the architects of the building.

Buffalo, N. Y.—The McKinnon Chain Company, recently incorporated with capital of \$1,000,000 to manufacture lap-welded chain by a new electrical process, has plans completed by its own engineer, for a two-story steel and reinforced concrete factory building, 100x200 feet. Lachan E. McKinnon, president 252 Amherst street.

Minneapolis, Minn.—The Peteler Car Company has succeeded the Kilgore-Peteler Company and will make extensive additions, alterations and extensions to their plant in Southeast Minneapolis. Charles S. Hale, president.

Talladega Springs, Ala.—Bishop Alabama Marble Company will increase its capital stock \$175,400 to erect a new marble plant and enlarge present quarries. John A. Bishop is president.

Buffalo, N. Y.—The Spencer-Kellogg Company (Spencer Kellogg, president, Ganson and Michigan streets), has plans completed for a four-story steel and brick linseed oil refinery building, 40x100 feet, to be erected at Elk street, D. L. & W. Railroad and the Buffalo River. Cost \$50,000.

Marshalltown, Ia.—The C. A. Dunham Company received bids until August 27 for construction of a brick and mill construction office building, a brick, steel and concrete factory building and a brick and concrete power house, and underground tunnels. R. R. Maybory, architect, Cedar Rapids.

Joliet, Ill.—Architect Charles L. Wallace, 323 Jefferson street, took bids about August 24 for constructing a two-story concrete factory, 66x150 feet, for the Champion Machinery Company, P. F. Carroll, president.

Wabash, Ind.—Garcus & Rawley will rebuild school furniture factory and ma-

chine shop recently destroyed by fire, at a loss of \$75,000.

Minneapolis, Minn.—Architects Long, Lamoreaux & Long are preparing plans for an addition, to be erected to the Minnesota Moline Plow Company's building at 401 Third street, north. It will be 80x100 feet, five-story, of pressed brick and interior of heavy mill construction. Estimated cost, complete, about \$70,000.

Economy, Pa.—William B. Scaife & Sons, Pittsburgh, received the contract for structural steel for a one-story brick or concrete and structural steel manufacturing plant addition, to be constructed for the National Metal Molding Company.

Minneapolis, Minn.—Architect William M. Kenyon, Guaranty building, is preparing plans for a three-story reinforced concrete or cement block plant, 165x275 feet, to be erected near Ninth street and Ninth avenue, southeast, for the Minneapolis Motor & Truck Company. Cost, \$100,000.

Newark, O.—Architects Richard, McCarty & Bulford, of Columbus, awarded to Darnold & Maddox, Newark Trust building, the contract for erecting a two-story brick shoe factory on East Church street for G. Edwin Smith Shoe Company. Cost \$17,000.

Newell, Pa.—The Nicola Building Company, of Pittsburgh, have started excavations for a one-story concrete, steel and iron manufacturing plant, to be constructed for the General Chemical Company, of Pennsylvania.

Carthage, O.—Architect Gustave W. Drach, Fourth and Walnut streets, Cincinnati, awarded the following contracts for erecting a one-story brick and concrete boiler house on Fifth street, for the Chatfield Manufacturing Company. Carpenter work to the M. Marcus Building Company, and brick work to Charles W. Ireland, both of Cincinnati.

Cincinnati, O.—Architects Baussmith Drainie, 31 East Fifth street, awarded to The Concrete Steel Company, 27 Mitchell building, the contract for constructing reinforced concrete factory buildings, on Harrison avenue, for the Kenton Baking Powder Company. Cost \$75,000.

Columbus, O.—Architects Charles L. Inscho, 145 North High street, will be ready for estimates about September 10, on erecting a three-story brick paper box factory on Lorain avenue, for the Jones Paper Box Company.

Cincinnati, O.—Architect Martin Fisher, 2156 Central avenue, received estimates until September 7, on erecting a two-story brick and steel wagon shed on Freeman avenue, for the Wetterer Brewing Company, 2115 Central avenue.

The same architect received bids until September 7, on constructing a corrugated iron and frame factory building on Colerain and Sassafras streets, for the Victor Lamp Company.

Johnstown, Pa.—Contractors Joseph Leventry and John C. Hartley, 160 Griffith street, have started foundations for a two-story brick factory addition, to be erected on Du Pont Place, for the Century Stove & Manufacturing Company.

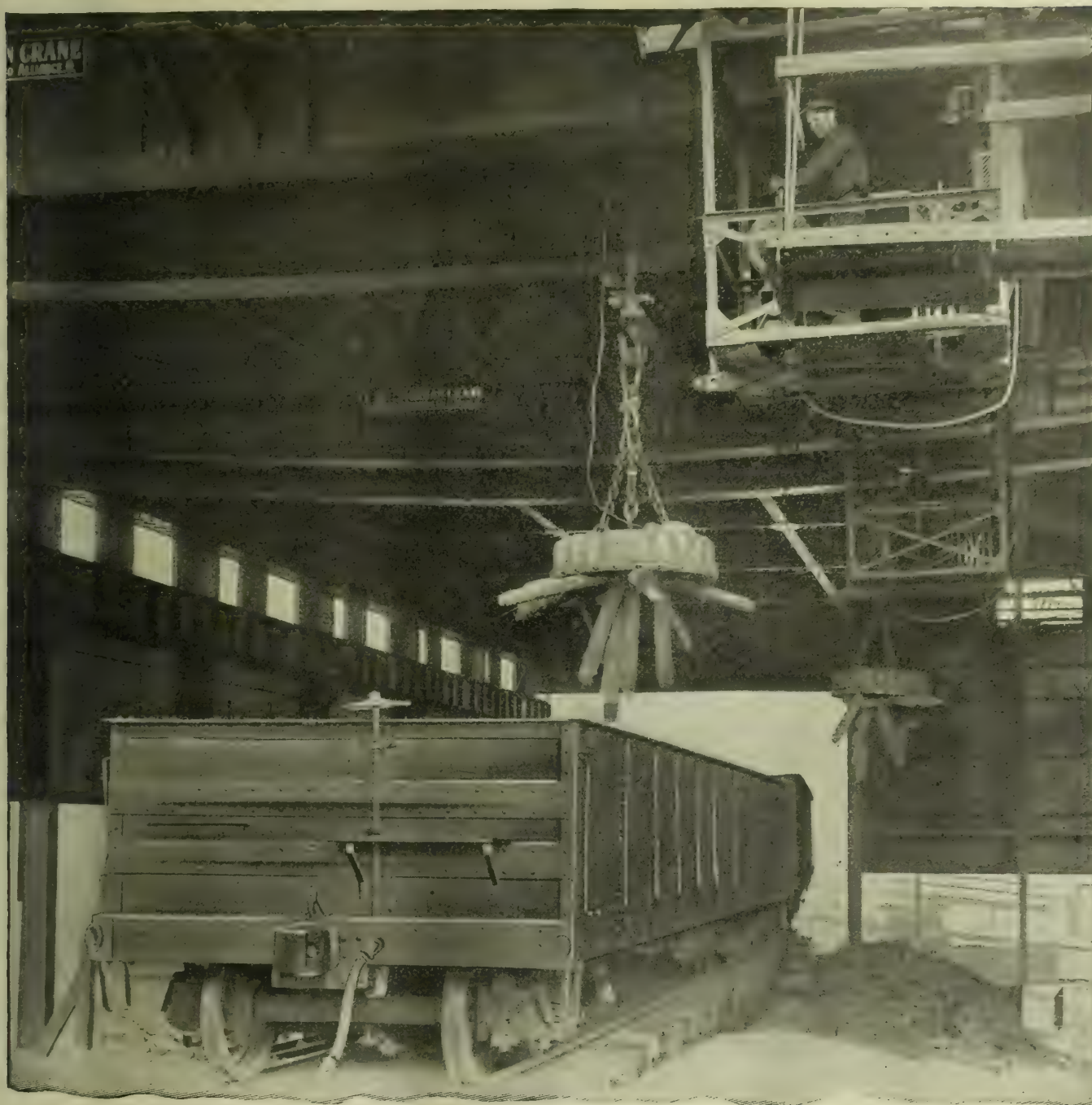
The Midland Railroad owned by Col. John T. McGraw, is being extended 10 miles into the rich lumber lands of eastern Webster county.

NEW PATENTS.

The following patents granted August 24, 1909, are reported expressly for the Industrial World by J. M. Nesbit, patent attorney, Park building, Pittsburgh, Pa.:

Interior arrangement for smoke boxes of tubular boilers, Friedrich W. Born, Charlottenburg, Germany; device for forming molds to produce screw threaded castings, George A. Hattersley, Norwood, O.; assignor to The Victor Safe & Lock Company, Cincinnati, O.; means for removing soot and sparks from smoke passing through flues, John McLaughlin, Ottawa, Ontario, Can.; apparatus for reducing pipes in ingots, George L. Norris, Burnham, Pa., assignor to The Standard Steel Works, Burnham, Pa.; rib for boiler-arches, Ernest W. Ashenden, Minneapolis, Minn., assignor to William Brothers Boiler & Manufacturing Company, same place; internal-combustion engine, Harry W. Beach, Montrose, Pa.; iron wire and process for making the same, Joseph C. Fraley, Philadelphia; turbine, Solomon T. Holly, Los Angeles, Cal., (2); method of removing scale from metal pipes, Charles Thibodeau, Chelsea, Mass.; rotary engine, Franklin-Tompkins, New Dorp, N. Y.; Steam-boiler furnace, William G. Munson, Indianapolis, Ind.; apparatus for forming wire hoops, Andrew J. Spicer, Franklin, Ind.; apparatus for drawing wire, John Stratton and Ernest A. Claremont, Old Trafford, Manchester, England; variable-speed elastic-fluid turbine, Giuseppe Belluzzo, Milan, Italy, (2); feed-water regulator, Harry Evans, Bryn Mawr, Pa.; sectional wheel, Edwin E. Slick, Pittsburgh; wheel construction, Robert B. Woodworth, Pittsburgh; turbine, Robert Henderson, Thomaston, Conn.; means for rolling sheet-metal cylinders, Major M. Parker, Troy, N. Y.; furnace for volatile metals, Woldemar Hommel, London, England, assignor to Metals Extraction Corporation, Limited, same place; centrifugal pump, Chester W. Lerner, Philadelphia; stay-bolt, William M. Smith, Turtle Creek, Pa.; boiler-stoker, John E. Bell, New York, N. Y., assignor to The Babcock & Wilcox Company, same place; recessing-machine, Oliver M. Mowat, McKeesport, Pa., assignor to National Tube Company, Pittsburgh; metal port and end-wall construction for regenerative furnaces, Jacob B. McKennan and Frank E. Parks, Pueblo, Colo.; valve system for hammers, Chester B. Albree, Pittsburgh, assignor to The Chester B. Albree Iron Works Company, same place.

The Parkersburg, Marietta & Interurban Railway Company, Parkersburg, expects to extend its railway across the Little Kanawha River in Parkersburg and from Marietta past Lowell and Coal Run to Beverly, O.



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PACIFIC COAST AGENTS: Otis & Squires, 155 New Montgomery Street, San Francisco.

Wanted, For Sale, Bargains, Etc., in Brief.

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Situation—An experienced accountant, correspondent and general office man, accustomed to handling men and accounts, desires position where energy and attention to details will merit recognition. Address Postoffice Box 194, Northside, Pittsburgh.

Wanted—Attention, manufacturers. An old-established rolling mill, whose output is high grade bar iron, and black and galvanized sheets, and having ample ground in Pittsburgh district, would be interested in having located on their ground manufacturing adjuncts that use above materials. Parties engaged in manufacture of trade articles from above materials, who contemplate change of location, or engaging in new enterprises, can address office of the Industrial World, Pittsburgh, Pa., giving full particulars as to tonnage used; space desired, etc.

Wanted — A second-hand 15 or 16 h. p. stationary gas engine. Address Norwood Machine Company, Cincinnati, O.

Wanted — Manufacturers wanted to build cold rolled shafting machinery on royalty basis, under United States patent No. 895,364, dated August 4, 1908, described in the Industrial World December 28, 1908. Address John S. Griffin, Roslyn, Washington.

SEALED PROPOSALS.

Machines for Tabulating Agricultural Statistics. — The Director of the Census is considering various types of machines with a view to determining the one best adapted for tabulating the agricultural statistics of the Thirteenth Census. Any one possessing a machine adapted for this purpose is invited to present the

same for test in practical operation at the Bureau of the Census, Washington, D. C., on or before July 31, 1909. For further information address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

Sealed Proposals will be received at the office of the Director of the Census, Washington, D. C., until 2 o'clock p. m., August 9, 1909, and then publicly opened for furnishing all the labor, materials, and work necessary for the construction in lots of 60, 75, 100, or 125 tabulating machines and delivering the same complete, free of all charges for transportation, at the Census Building, Washington, D. C. right is reserved to accept or reject all bids in whole or part, to strike out any item or items in the specifications, and to waive any defects. For specifications, blueprint drawings, blank proposals, and full information, address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

FACTORIES WANTED.

Factories Wanted — Grafton, W. Va., will give to manufacturers, a free site on railroad siding, with shipping facilities in all directions, five-cent gas, and an inexhaustible supply of soft water and coal. For information, address Secretary, Grafton Board of Trade.

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All in first class condition. Used only as spare. We are replacing with 500

horsepower gas engine of our own make, and 400 K. W. generator. For price and photograph address Mesta Machine Company, Pittsburgh, Pa.

For Sale — One second-hand 8x9" Chuse engine, direct connected to 15 k. w. Triumph generator; good condition. Electric Machinery & Specialty Company, 204 Franklin avenue, St. Louis, Mo.

For Sale—Rock Drill—Ingersoll make; motor, 1 h. p., complete; shafting, pulleys, hangers, belting, lathes, 1 drill press, cheap; boilers, engines, pumps. William H. Flynn Machinery Company, 404 East Second street, Cincinnati, O.

For Sale—One-fifth interest in an up-to-date manufacturing plant, building a line of special and patented machinery, and having a very extensive jobbing trade. Purchaser can secure a salaried position as engineer, chief draftsman, or salesman. Price of one-fifth interest \$10,000. Address Box 154, care Industrial World, Pittsburgh, Pa.

Machinery Bought, Sold and Repaired — Engines and boilers, all styles and sizes, both new and second-hand; machinery of every description for all purposes; also pulverizer and crushers. Write to me for anything you want. Gruendler Machine Company, 928 Main street, St. Louis, Mo.

For Sale—One 18x24" slide valve engine 2 66"x18" tubular boilers, 1 heater, 1 deep-well pump and 5 wood working machines; will overhaul and put in first-class condition, cheap; also, several direct current motors, 3, 5, 10 and 15 h. p., 220 volts. The Farrin-Korn Lumber Company, Winton Place Station, Cincinnati, O.

For Sale — Rolling Mill—The property known as the Seyfert Rolling Mill, consisting of Puddle and Plate Mills for making sheared skelp is offered for sale. Located about four miles from Reading, Pa., on the Wilmington & Columbia Division of the Reading Railroad. For particulars apply to Samuel R. Seyfert & Brother, Reading, Pa.

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For Sale—10,000 acres in tracts, fine ore lands in Virginia and Tennessee. Fine location for transportation. Abundant limestone, water, coking coal, nearby and on the properties. Low price. For particulars write, in care Box 210, Industrial World.

THE NATURAL AND ARTIFICIAL ABRASIVE MATERIALS IN THE UNITED STATES.

The United States Geological Survey has issued a report, from the pen of W. C. Whalen, on the production of abrasive materials in the United States during 1908, both natural and manufactured. The report comes as an advance chapter from the forthcoming review of the Mineral Resources of the United States for the calendar year 1908. The materials touched on are millstones and buhrstones, grindstones, and pulpstones, oilstones and scythestones, corundum and emery, abrasive quartz and abrasive feldspar, garnet, infusorial earth and tripoli, pumice, and the artificial abrasives carborundum, alundum, and crushed steel. Of some of these materials only a small part of the entire product is actually used for abrasive purposes. In this report, so far as it has been possible, there is included, with the exception of tripoli and possibly infusorial earth, only that part of the product that is actually used for abrasive purposes.

Under the head of artificial abrasives, the production of alundum, carbodundum, and crushed steel from 1905 to 1908, inclusive, is given in the following table:

Year	Quantity in Pounds	Value
1905.....	9,820,000	\$701,400
1906.....	11,774,300	777,081
1907.....	14,632,000	\$1,027,246
1908.....	8,698,000	626,340

The report thus describes the industrial enterprises engaged in the production of these artificial abrasives:

The Carborundum Industry.

Carborundum is manufactured by a single firm in the United States, the Carborundum Company, of Niagara Falls, N. Y. The foreign demand for this abrasive has increased so rapidly within the last few years that the company has constructed a plant at Dusseldorf, Germany, for the manufacture of carborundum wheels and abrasive articles. The factory began operations in February 1907.

Carborundum is manufactured by fusing in the intense heat of the electric furnace a mixture of granulated coke, very pure glass sand and sawdust. The two materials first mentioned are the purest obtainable. The coke is the carbonaceous residue from the distillation of petroleum; the sand used is the purest glass sand. The sawdust is added entirely for mechanical purposes, namely, to make the mixture porous and thus to avoid explosions of the carbon monoxide produced during the course of the reaction. The fundamental reaction takes place between the sand (silica) and the coke (carbon), resulting in the

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production of a carbide of silicon or carborundum. The details of the furnace construction and operation have been described by F. A. Fitzgerald,* and will not be considered here.

It is reported that the company "will increase its extensive plant during 1909 by the addition of a four-story brick and steel structure. The new building will be 225 feet in length and 60 feet in width. One entire floor is to be given over to the manufacture of carborundum, sharpening stones, hones, scythestones, and other specialties. The other floors will be used for the mixing and wheel molding departments and for the storage rooms.

"During the past year the company has added several new lines to its manufactured products. These include garnet paper and cloth, used largely in the wood and furniture trade, and emery paper and cloth, used in finishing metal and machinery parts. Plans are under way to have the company cover the entire abrasive field with its products, and as these plans mature they will result in a still larger plant and a greater working force."

The abrasive known as "alundum" is manufactured from bauxite by the Norton Company at Niagara Falls. The crude bauxite is first calcined to drive off combined water. This is accomplished in a rotary calciner 60 feet long, heated by two gas producers. The machine at Niagara Falls is continuously acting and will calcine 40 tons of bauxite per day.

The ore after calcination is ready for the electric furnaces. These are conically shaped pots which stand on cars and are heated by vertical electrodes, which are gradually raised as the molten bauxite fills the furnace. In the furnace room 2,000 electric horsepower are used. It is said that the temperature attained in the furnace ranges from 5,000 degrees to 6,000 degrees F. The dimensions of the furnaces are calculated so that the fusion shall not extend to the water-cooled shell. During the fusion iron is reduced from the bauxite as a result of the reducing action of the electrodes. This iron, containing 5 to 12 per cent silicon, is sold to the steel makers. These masses, which are called "pigs," each contain about three tons of abrasive material.

After the completion of the fusion, the furnace is taken to a position under an electric crane, which removes the solidified mass and places it on the cooling floor until it is cool enough to handle. The mass is then broken up and fed to a crusher, after which the alundum passes through a reel which removes all the fine dust, which is re-fused. The product which has gone over the reel is passed over a sorting belt, where the

*Electro-chem. and Metallurg. Industry, February, 1906.

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material not up to the standard is picked out. The resulting product in fragments about the size of a man's fist is then loaded on cars and sent to the company's plant at Worcester, Mass., where it is subjected to the various operations necessary for use in the alundum wheels.

One of the recent applications of alundum is as a refractory material. The substance melts at 2,300 degrees Centigrade, and has a very low coefficient of expansion, if it has any at all. It is, moreover, very inert chemically, and tests made in the basic open-hearth furnaces show that it is not appreciably affected by slags in these processes. The lining of a Deville furnace does not show deterioration after repeated burns at 1,800 degrees Centigrade. It remains to be proved just how much better alundum is than other standard refractories, as its cost will necessarily be quite high. It is believed, however, that for many special purposes it will prove of great value.

The method of manufacturing crushed-steel abrasives has been described by M. M. Kann, secretary and treasurer of the Pittsburgh Crushed Steel Company,* and by Pratt.†

In the manufacture of crushed-steel abrasives, high-grade crucible steel is heated to nearly white heat, and is then quenched in a bath of cold water. The fragments of steel thus produced are then crushed to particles varying from fine powder up to one-sixth of an inch, more or less, in diameter. The crushed product is then classified and tempered, being then known as "diamond crushed steel," "diamond steel emery," and "steelite."

The chief use of crushed steel is in the stone, brick, glass, and metal trades, the size of the steel used depending on the character of the stone to be cut, rubbed, ground, or polished.

Corundum and Emery.

Among the natural abrasives, considerable space is given to corundum and emery. The report says:

Practically all the corundum and nearly all the emery now used in the United States is imported, and the industries in which these two abrasives are factors are now mainly manufacturing industries. To escape the duty, emery is imported crude as ballast from Greece and Turkey; corundum comes mainly from Canada in pulverized form.

In 1908 the output of emery in the United States came from but two localities, Chester, Mass., and Peekskill, N. Y. The emery at Chester is considered of good quality, but operations at this locality are practically suspended. The Ashland Emery and Corundum

*Proc. Am. Assoc. Adv. Sci., Pittsburgh meeting, July, 1903.

†Mineral Resources U. S. for 1903, U. S. Geol. Survey, 1904, p. 1013.



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Company continues to pick over the old dumps during the warmer months and to mine a small quantity of ore from the old pockets during the winter. No exploratory work, so far as known, has recently been undertaken, and the mill is in operation only part of the time.

The deposits of emery near Peekskill, Westchester county, N. Y., are located about four miles southeast of the town and a few miles east of Hudson River. It is reported that the deposits were first exploited for iron ore. The emery occurs in a series of igneous rocks intruded into metamorphic sedimentary rocks. The emery deposits, according to G. H. Williams, are simply segregations of the basic oxides in the norite, the components of the latter rock occurring in even the purest emery ore. A study of the thin section of the material from these deposits has revealed the presence of hercynite (iron spinel), magnetite, garnet, and corundum, some of the corundum being pale blue and perfectly transparent. The deposits vary considerably in size. They are all worked by open cuts, which vary in width and depth with the size of the ore body. The ore is blasted out by light charges of explosives and is broken up and roughly cobbled before shipment to the mill. The subsequent mill treatment consists in cleansing and grading the rough cobbled material for use in the form of emery powder, emery paper and cloth, and emery wheels. It has been claimed that the Westchester material is very serviceable when made into wheels with a vitreous bond, but in general the selection of a bond depends upon the work to be accomplished, and the work to be accomplished should always be stated when ordering the wheel.

There was no production of corundum reported to the United States Geological Survey in 1908. It is understood, however, that certain of the old mines located in Clay county, N. C., which have been closed down for the last few years, have come into new hands and will soon be worked, rather with the object, however, of finding gem materials than abrasive materials. A find of corundum has been reported west of Statesville, N. C.

The production of emery in the United States in 1908 amounted to only 660 short tons, valued at \$8,745, a decrease of nearly 30 per cent from the output of 1907. These figures represent the value of the rough material as it comes from the quarries at the point of shipment. All the emery mined at Peekskill is shipped to other points for grinding and manufacture into finished forms, after which, of course, its value is greatly increased.

Imported emery comes from Asia Minor, Turkey, and the island of Naxos, Greece. According to E. L. Harris,

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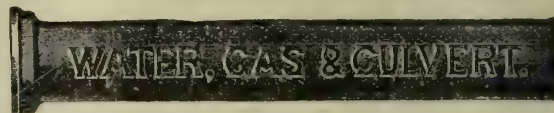
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United States Consul at Smyrna, Asia Minor, Turkey, all the mines in Asia Minor which are now worked are located from 50 to 200 miles southeast of the City of Smyrna. At the mining operations near the city all of the visible emery has been removed, and the cost of extraction is almost doubled from the fact that the workings are so far below the surface. Mining operations are conducted in the most primitive fashion. In the case of the deposits remote from Smyrna, the ore is brought by camels and less frequently by mules and donkeys. The value of emery varies from \$17 to \$19 per ton at the point of shipment. The yearly shipments average 20,000 tons from Turkey and 7,000 tons from Naxos. Sixty per cent of this goes to the United States. The emery and corundum imported into the United States from all foreign sources decreased in value from \$521,082 in 1906 to \$248,399 in 1908.

Canadian corundum is mined chiefly by two companies, the Ontario Corundum Company and the Canadian Corundum Company (Limited). The deposits of corundum occur in pinkish syenite and nepheline syenite, and are located in the Province of Ontario. The Canadian Corundum Company (Limited) during a part of 1907 treated only corundum from its Craig mine at Craigmont, Ragland township, Renfrew county, Ontario, where mining operations were begun in 1900. The quantity and value of Canadian corundum produced during the last three years is: 1906, 2,274 short tons, \$204,973 (high record); 1907, 1,892 short tons, \$177,922; 1908, 1,039 short tons, \$100,389.

Infusorial Earth and Tripoli.

Of the production of infusorial earth and tripoli, and its varied uses in recent years, the report says:

In previous reports on the production of abrasives in the United States it has been the custom to combine the statistics of infusorial earth and tripoli. So far as our present information goes, the two substances are quite different in origin and to a certain extent in their uses.

Some of the Missouri tripoli is, and always has been, used for abrasive purposes, but much of it is used in the manufacture of filter stones. The Illinois product is employed in the paint industry, as a wood filler, for enameling purposes, etc. No attempt has heretofore been made to procure from producers of tripoli a definite statement of the exact proportion used for abrasive purposes, nor has any attempt been made to get at the tonnage of rough tripoli blocks worked up into filter stones. Even if this tonnage has been found, it would be impossible to value the product on a uniform basis, and thus to

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obtain a reliable ratio between quantity and value, for the reason that the price of filter stones varies and is dependent not only on the size of the stones, but also on the amount of work done on each. For this reason it has been decided to give simply the value of the production of infusorial earth and tripoli and to omit the tonnage. The value of these products produced in 1907 and 1908 was, respectively, \$104,406, and \$97,442.

Infusorial earth in 1908 was mined for market in the following States: California, Connecticut, Illinois, Maryland, Massachusetts, Missouri, and New York.

Diatomaceous or infusorial earth resembles chalk or clay in its physical properties, but can be distinguished at once from chalk by the fact that it does not effervesce when treated with acids. It is generally white or gray in color, but may be brown or even black when mixed with much organic matter. Owing to its porosity it has great absorptive powers. Chemically, it is a variety of opal.

Heretofore the principal uses of infusorial earth have been largely for abrasive purposes, in the form of polishing powders, scouring soaps, etc., but of late its uses have been considerably extended. Owing to its porous nature it has been used in the manufacture of dynamite as a holder of nitroglycerine. The porous structure also renders it a nonconductor of heat, which property, in connection with its lightness in weight, has extended its use as a packing material for safes, steam pipes, and boilers, and as a fireproof building material in general. The California product, according to Arnold and Anderson, may be cut into any shape desired and, like the Missouri tripoli, may be used as a filter stone. The material is quarried for building stone in southern California, for which purpose it seems to be well adapted, especially in that region of earth tremors, owing to its elasticity and because the minimum amount of damage is likely to result from the falling of so light a material.

In Europe, especially in Germany, it has of late years found extended application. It has been used in the preparation of artificial fertilizers, especially in the absorption of liquid manures; in the manufacture of water glass, of various cements, of glazing for tiles, of artificial stone, of ultramarine and various pigments, of aniline and alizarine colors, of paper, sealing wax, fireworks, gutta-percha objects, Swedish matches, solidified bromine, scouring powders, papier-mache, and a variety of other articles, and there is a large and steadily growing demand for it.

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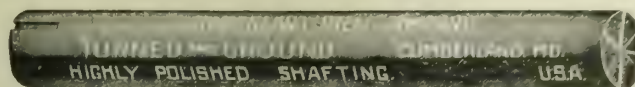
water present. It is then transferred to flame or muffle furnaces and heated at a higher temperature. Care is observed, however, not to raise the temperature too high, as the absorptive power is destroyed by overburning. The earth is then ground to a fine powder between rollers and sieved; at this stage it should contain less than one per cent of moisture. The product is put into sacks and used the same day or before moisture can be reabsorbed. Where all the precautions required for use in the manufacture of dynamite need not be observed, a prolonged drying in chambers supplied with steam pipes usually suffices. In the United States a new use of the material is reported in the manufacture of records of talking machines. For this purpose it is boiled with shellac, and the resulting product has the necessary hardness to give good results.

Among the newer deposits reported to the Survey during the year is one from Blaine county, Idaho. The deposit is located about 25 miles west of the Oregon Short Line Railroad in the Smoky mining district. There is a good wagon road to the deposit, which is reported as lying in a blanket form, 40 feet thick and outcropping about 300 feet. Still another deposit has been reported from near Tonopah, Nev.

There is an importation of infusorial earth and tripoli into the United States each year which is not separately recorded by the Department of Commerce and Labor, but which is included with rotten stone used for similar purposes. The value of the imports of rotten stone and tripoli for the last five years has been as follows: 1904, \$23,022; 1905, \$18,986; 1906, \$25,990; 1907, \$27,121; and 1908, \$17,252. No record is kept of the number of tons of this material imported. The Canadian production during 1908 was 30 short tons of tripoli, valued at \$195.

IRON IN THE TRANSVAAL.

A report of the Transvaal Government mining engineer, R. N. Kotze, on the prospects of establishing an iron and steel industry in the Transvaal, has been made public at Pretoria. The minor scheme is the establishment at the Pretoria works of the Central South African Railways of an electric furnace, at the joint capital cost of that administration and the Government, for the purpose of working up scrap iron and steel. The amount involved is £30,000. It is proposed that an export rate be imposed, or that the railway rate be raised, so as to make export business unremunerative, in order that the scrap may be utilized for making small and simple castings, such as shoes and dies and drill steel, in the Transvaal. J. A. Vaughan, chief inspector of machinery,



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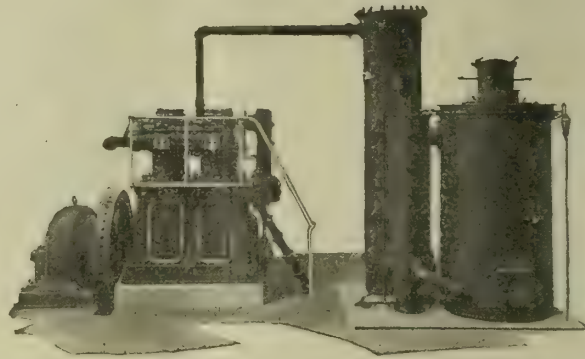
and G. C. Elliott, chief mechanical engineer of the C. S. A. R., are on their way to England to consult with Government authorities. The major question is the erection of blast furnaces in the Transvaal. Mr. Kotze, after reviewing the various deposits within the Transvaal borders, considers that were blast furnaces established, the bulk of the ore would be drawn from the ferruginous quartzite of the Pretoria beds, which average between 40 and 45 per cent, though some portions of the seams run up to 55 per cent, and that the high-grade ore of Bosmankop (which lies some 25 miles southeast of Middleburg), a very pure hematite going within five per cent of the possible maximum, and such portions of magnetite (found in the Pretoria district) as contain little of the deleterious element, titanitic acid, will be used for grading up. The Government mining engineer appears to fear some difficulty with regard to the provision of a proper quality of coke. Up to the present no coke suitable for iron smelting has been made from Transvaal coal. Years ago fairly good coke was made from coal at the Maggie's mine, south of Middleburg. Mr. Kotze thinks that Natal coal may prove more suitable for coking, and in this connection it may be remarked that the Vryheid Company is making experiments in this direction. It is thought by many that Swaziland may yield coal suitable for coking, and the general view is that the coking problem is by no means insuperable. After examining the statistical returns, Mr. Kotze considers that of the Transvaal mines' consumption of iron and steel, 50,000 tons, valued at close upon £900,000, "are within the reach of blast furnaces with accessory plant for conversion into steel of various classes." Beyond this is the general South African market. It is thought that the principal products of a young iron industry would be "pig iron, rails, bars, ingot iron and steel, plate and sheet iron and steel, and perhaps fencing material." The cost of a plant to produce 54,000 tons a year (34,000 tons of local and South African consumption and 20,000 tons for export) is roughly estimated at from £250,000 to £300,000. The Government mining engineer decides that the provision of blast furnaces must be a matter for private enterprise, assisted and fostered by the Government. The Canadian bounty system has, it is claimed, worked well and built up a substantial iron industry in the Dominion. The adoption of a similar plan in South Africa is suggested. It is proposed that the bounty in the Transvaal should be 15s. per ton, diminishing by 1s. 6d. each year until extinguished. Beyond this, five per cent on the capital is to be guaranteed for the first five years.

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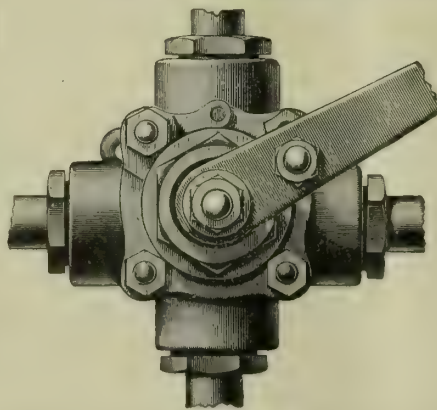
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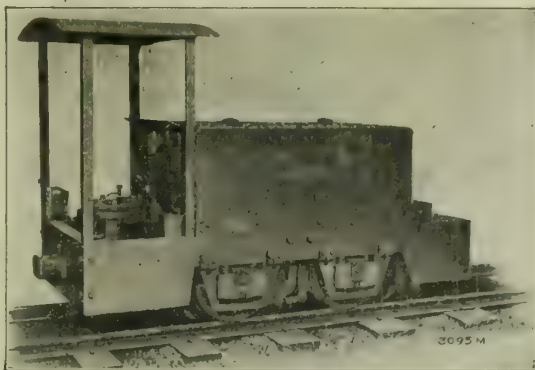
In Natal, South Africa, a blast furnace has been at work for some time at Sweetwaters, near Maritzburg, and, according to the "South African Mining Journal," a considerable quantity of pig iron of excellent quality has been produced. A company is being formed to take over the ground and plant. A second furnace is being erected, so that 14 tons of pig iron can be turned out daily.

It is also intended to establish a foundry for castings, for which expert workmen are being imported from England.

GAS ENGINES FOR HIGH-PRESSURE GAS TRANSMISSION LINES.

Gas-engine-driven "booster" stations have demonstrated their economy and reliability so thoroughly in such installations as the Westinghouse twin tandem engine equipment at the Mohican Oil & Gas Company's plant at Howard, O., that this type of unit is largely superseding the former steam-driven compressors. Evidence of this is the number of orders recently received by the Westinghouse Machine Company for engines for this class of duty. Among these may be mentioned: Three 24x48 inch twin tandem gas engines, rated at 1,350 horsepower each, driving Ingersoll-Rand compressors, for the Columbia Gas & Electric Company, Kenova, W. Va.; two 23½x48 inch twin tandem horizontal gas engines, rated at 1,300 brake-horsepower, driving Laidlaw-Dunn-Gordon gas compressors, for Ohio Valley Gas Company, Pittsburgh; one 23½x48 inch horizontal twin tandem, 1,300 horsepower gas engine, driving Ingersoll-Rand compressor, for Logan Natural Gas & Fuel Company, Sugar Grove, O.; one 17x26 inch horizontal single-cylinder gas engine, 300 horsepower, driving Ingersoll-Rand compressor, for Hanover Oil & Gas Company, Mt. Vernon, O.

A typical example of the conditions under which installations of this class operate, is presented in the compressing plant at Howard, O. At this station the compressors deliver to the long-distance pipe lines, at 165 to 200 pounds gauge, gas received from the wells at 25 to 80 pounds. These wells are located within a radius of 20 miles of the plant, which delivers to towns at distances of 80 miles. The compressor engines take their fuel from the well mains through reducing regulators, at about atmospheric pressure. These 1,250 horsepower, 23½x48 inch twin tandem engines were operated successfully over the desired range of speed—44 to 88 revolutions per minute—and consume as an average about four per cent of the compressor output. Natural gas in this locality has a fuel value averaging 974 B. t. u.



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THE FUTURE OF BESSEMER AND BASIC.

The tendency to base contracts for the sale of various materials upon the average price of pig iron is growing. For many years, say a couple of decades, some important billet contracts in the Pittsburgh district have been so based, and the number of such contracts has been large in the past few years, declares the American Metal Market of a recent issue. Finished steel contracts, are in many cases based upon pig iron, and in late years a favorite method of contracting for pig iron itself has been to base the settlement price upon the disclosed price of pig iron. In the coke trade important transactions have often been based upon the exchange of so many tons of coke for one ton of pig iron, while in this case there has been a strong tendency in the past year or two to substitute for the actual transfer of pig iron a money price based upon the disclosed price of pig iron, a substitution which has much to recommend it, as relieving the coke interest of the necessity of disposing of the iron, and relieving the blast furnace of the competition of its own iron.

Until lately the only recognized pig iron standard was that furnished by Bessemer iron. Lately basic iron has also been taken, and the opportunity to choose the standard has given rise to interesting questions, buyer and seller each naturally wishing to choose the standard which will likely give him the advantage.

The question is simply what is the prospective spread between Bessemer and basic iron? It is a question upon which our views have often been asked. Conditions and prospects in the iron and steel trade are changing so rapidly that new lights are constantly being thrown on the subject.

The rush to basic open-hearth steel is not new in the general sense but it is new as affecting, in an important way, the relation between demand and supply of Bessemer and non-Bessemer ores respectively. From 1897 to 1899, for instance, production of basic open-hearth steel doubled, but as the increase was merely from one million to two million tons, the latter being less than one-quarter the production by other processes, the increase was unimportant to this issue. Last year, however, the production of basic open-hearth steel exceeded the production of Bessemer steel, and in future a strong preponderance is promised.

Bessemer steel is relatively on the decline; the Bessemer department at Duquesne was abandoned two years ago, while the Bessemer department at Homestead has run little since the de-



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pression. The latest Bessemer steel plant to be built was put in operation three years ago, and there are no signs of any other Bessemer steel plant to be built. Basic open-hearth steel capacity, on the other hand, continues to expand. The Steel Corporation is completing a program formulated in 1906, involving 56 basic open-hearth furnaces at Gary, 18 at Duquesne, 12 at Youngstown and six each at Lorain and Chicago. The Pittsburgh Steel Company recently completed a plant at Monessen, Page at Monessen increased its capacity, at Butler and Brackenridge wholly new plants are being built, the Republic Iron & Steel Company is about to build a new plant at Youngstown, and the Sharon Steel Hoop Company and Americal Rolling Mill Company are increasing capacity.

The electric refining of steel promises, at a cost of from \$2 to \$5 a ton, according to the degree of refining, to convert ordinary basic open-hearth steel into fine steel, the competitor of the acid open-hearth process and even of the crucible process. The electric process promises that the acid open-hearth process, which is a consumer of Bessemer iron, will not undergo any great growth in the future. It has never approached a consumption of a million tons of Bessemer iron in a year.

The bearing of these developments is obvious. In the past a large part of the Lake Superior ore production has been of Bessemer ores. The tendency has been to exhaust the Bessemer deposits more rapidly than the non-Bessemer, and based upon previous rates of exhaustion predictions are made that Bessemer ores will become scarce. These developments show, however, that predictions for the future must not be based on the records of the past but should be based upon the latest developments and the trends as disclosed by the present.

We have been at some pains to estimate the amount of Bessemer ores taken from the Lake Superior region to the beginning of this year, and find the tonnage from the very inception, has been between 250,000,000 and 275,000,000 tons, while the total tonnage mined from the region has been about 400,000,000 tons, leaving between 125,000,000 and 150,000,000 tons for non-Bessemer ores. The ore interests have seen that to continue such a rate of mining of the two grades would exhaust the Bessemer ores long before the non-Bessemer ores, but it can readily be seen that the future is not to see a continuance of this relation. We are working up to a rate of 50,000,000 tons of Lake Superior ore a year, but it will probably not require more than about 20,000,000 tons of Bessemer ore to meet the requirements in prospect. Large supplies of Bessemer ore, it

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must be remembered, are to be imported, particularly from Cuba.

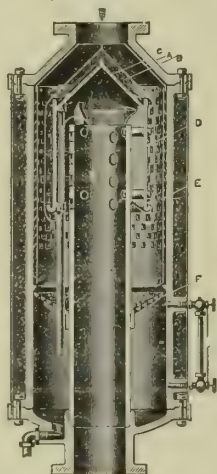
The extreme estimates of ore reserves in the Lake Superior region may be set down at one and a half and two and a half billion tons respectively, which at 50 million tons a year, would last between 30 and 50 years. Were the prospect that the demand would be, as in the past, two tons of Bessemer to one ton of non-Bes-

semer, the Bessemer ores would easily run out first, but the prospect is nearer two tons of Bessemer to three of non-Bessemer.

With these and other influences in mind we are not disposed to look for any material increase in the spread between Bessemer and basic pig iron in the Central West. If a buyer of material can get a contract based on 75

cents or a dollar below the Bessemer average he may do fully as well as on a contract based on the straight basic average, and he may, indeed, do better.

As an incident we may note that the pig iron averages for August showed by a slight margin the greatest spread of the year, the Bessemer average being \$16.234, valley, and the basic average \$15.268, valley, a spread of 96 cents.



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1903	463,000	2.08%
1904	473,000	1.78%
1905	1,735,000	4.92%
1906	2,076,000	4.55%
1907	2,129,000	4.36%
1908	4,535,000	8.89%
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For purpose of comparison we give the spreads as disclosed hitherto between the Bessemer and basic averages:

	Cents.
1905	31
1906	21
1907	83
1908	79
1909—January	94
February	69
March	50
April	75
May	46
June	29
July	47
August	96

OPENING FOR MINING MACHINERY IN BRAZIL.

Consul-General George E. Anderson, of Rio de Janeiro, sends to the Bureau of Manufacturers at Washington the following notes on additional railway work in Brazil:

The Government has entered into a contract with the Belgian syndicate, which is building a railway from the port of Victoria to the interior of the country, to build a branch line to Diamantino, and on to Curvelho, on the Central of Brazil Railway. This branch road will give Diamantino a great boom, and enable the owners of the diamond and gold mines in the district to transport their machinery and supplies to that place by rail, instead of by mule back, as at present. A large part of these mining properties is owned by Americans, who have been long waiting and working for this new improvement.

President Pecanha has asked authority from Congress to make the necessary contracts and issue the necessary bonds for the electrification of the Central of Brazil Railway in and near Rio de Janeiro, for the reason that the number of passengers carried increased from 13,423,779 in 1903 to 20,128,387 in 1908, while the means of giving service have not been proportionate, resulting in failure to meet unusual demands, as on Sundays and holidays. It is understood that the preliminary estimates and surveys of the Government engineers provide for the third-rail system, and that the work, without materially interfering with traffic, can be finished within two years, at an estimated cost of \$2,500,000.

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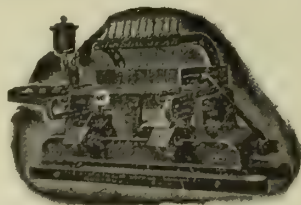
THE HEINLE COMPANY,

**METAL ROLLING
ENGINEERS.**

Economical Methods for Metal Conformation.
 Contract Roll Turning Done at Mills.
 Difficult Shapes a Specialty.
INSPECTION OF ROLLED MATERIAL.

**CRAFTON STATION,
PITTSBURGH, PA.**

The American Clay Working Machinery Co.
BUCYRUS, OHIO., U. S. A.



Manufacturers of
**CLAY WORKING MACHINERY OF ALL KINDS
AND CAPACITIES**

**IF YOU ARE INTERESTED
IN GETTING NEW BUSINESS**

Let us help you work out a line of advertising that will bring results.

We have devised some artistic booklets and are always at your command to make illustrations.

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Pittsburgh, Pa.**

REED F. BLAIR & C., FRICK BUILDING, PITTSBURGH, PA.

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Low Phosphorus, standard Bessemer,
 Malleable, Basic, Foundry, Gray Forge
 Chrome Ore, Ferro-Manganese, Ferro-Silicon, Silicon-Spiegel, Low

COKE

Strictly Standard
 Connellsville Foundry
 Silica Limestone.

The S. R. SMYTHE COMPANY, ENGINEERS AND CONTRACTORS

Steel Works, Rolling Mills, Blast Furnaces, Hot Blast Stoves, Etc. Furnaces for All Purposes.

Gas Producers

For Fuel and Power
 Applied for All Purposes.

House Building,

ESTABLISHED 1879

PITTSBURGH, PA.

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CONNELLSVILLE FOUNDRY
 AND FURNACE COKE, FOUNDRY, FORGE
 AND BESSEMER PIG IRON

LEETONIA,

OHIO.

PIG IRON — COKE

Cincinnati
 New York
 Buffalo
 Chicago
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The World's
 Greatest
**PIG IRON
HOUSE**

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 Boston
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ROGERS, BROWN & CO.

**BUCKEYE
PIG IRON**

**OLIVE
COAL**

THE COLUMBUS IRON & STEEL CO.,
 COLUMBUS, OHIO.

Bessemer Coke Co., MANUFACTURERS OF **Connellsville Coke**
FURNACE, FOUNDRY AND CRUSHED COKE.

Mines and ovens in Connellsville region.

Direct connection with all railroads entering the region.

Offices: Lewis Block, Pittsburgh, Pa.

CAPACITY 100 CARS DAILY.

INDIVIDUAL CARS.

L. & R. WISTER & CO.,

672 BULLITT BLDG.
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Branch Office: 507-508 Frick Building, Pittsburgh, Pa.

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Dunbar Furnace Company, Foundry, Forge and Basic Pig Iron, Semet-Solvay and Bee-Hive Coke, Coal. Dunbar Silica Rock Sand, 99 per cent. Pure. National Glass Brick Co.—Opalescent and Colored Glass Brick.

Buyers and Sellers of all kinds of Iron and Steel Scrap.

WASHINGTON COAL & COKE CO.,

General Office, Dawson, Pa. :: Sales Office, Conestoga Bldg., Pittsburgh.

YOUGHIOGHENY COAL

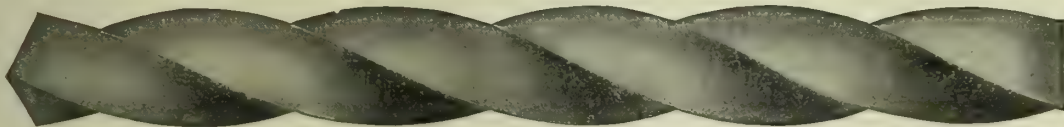
FURNACE, FOUNDRY AND CRUSHED

CONNELLSVILLE COKE

JONES & LAUGHLIN STEEL COMPANY

AMERICAN IRON & STEEL WORKS,
PITTSBURGH, PA.

COLD TWISTED STEEL BARS for CONCRETE REINFORCEMENT.



WHY YOU SHOULD USE THE COLD TWISTED BAR IN PREFERENCE TO OTHER TYPES OF DEFORMED BARS

I—60 to 100 per cent. increase in Elastic Limit.

II—20 per cent. less steel required--a saving in cost.

III—21 to 39 per cent. increase in tensile strength.

IV—COLD TWISTING removes the scale, or oxides, thereby permitting closer bond with the concrete.

V—Greater variety of sizes than any other concrete bar. You can specify the exact size required.

VI—Same Weight as plain squares of like size.

VII—The TWISTING COLD insures uniformity of the twists and is a physical test on each and every bar--which is not true of any other type of deformed bar.

VIII—Safety from brittleness. Our COLD TWISTED bars are warranted to bend around a diameter three times the size of the section.

We manufacture all sizes from $\frac{1}{4}$ " to $1\frac{1}{2}$ " increasing by 16ths, and in lengths up to 60 feet.

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Chain, Light Rails, Spikes, Etc.**

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Branch Office and Warehouses
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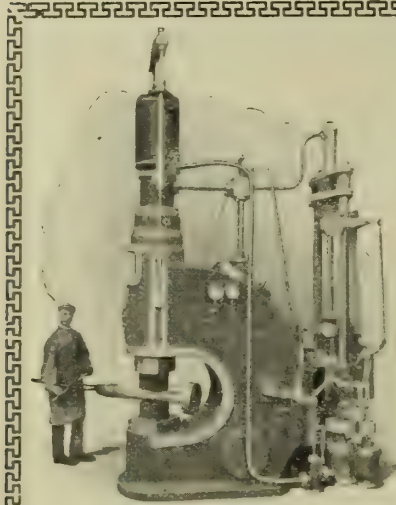
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NEW YORK

PHILADELPHIA
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CLEVELAND
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ATLANTA
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MANUFACTURED UNDER DAVY BROS., LTD. PATENTS.

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DOUBLE YOUR PRODUCTION WITH ONE HALF
YOUR LABOR COST AND STEAM CONSUMPTION.

COST OF REPAIRS REDUCED. ELIMINATES HEAVY SHOCKS AND VIBRATION.

"SINGLE LEVER CONTROL"

SMALL SIZES—SINGLE-FRAME TYPE. LARGE SIZES—FOUR-COLUMN TYPE.
BUILT FOR DOING ALL CLASSES OF FORGING, SHEARING OR PRESSING.

100 TONS TO 12000 TONS CAPACITY

UNITED ENGINEERING & FOUNDRY CO.,

2311 FARMERS BANK BLDG., - - - - - PITTSBURGH, PA.

EXCLUSIVE MANUFACTURERS FOR UNITED STATES, CANADA AND MEXICO.

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CARNEGIE STEEL COMPANY

PITTSBURG, PENNA.



STEEL SHEET PILING

The photograph shows 12-inch 40-pound United States Steel Sheet Piling, driven at Carrie Furnaces, as a permanent retaining wall, for the engine foundations, to prevent lateral displacement of silt by the weight of the foundation and the ingress of water from the Monongahela River.

For information apply to

CARNEGIE STEEL COMPANY

BIRMINGHAM
BOSTON
BUFFALO
CHICAGO

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CLEVELAND
DENVER
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NEW ORLEANS
NEW YORK
PHILADELPHIA
PITTSBURG

PORTLAND
SAN FRANCISCO
ST. LOUIS
ST. PAUL

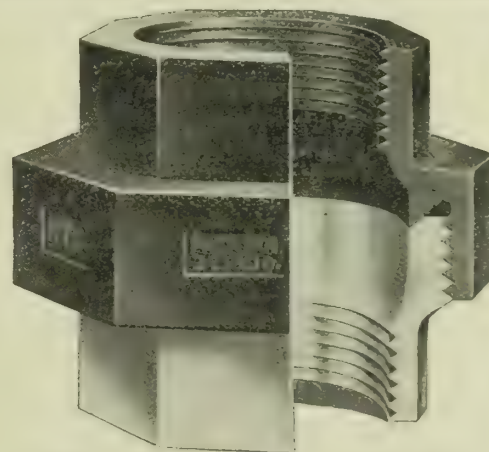
Export Representatives: United States Steel Products Export Company, New York.

Simple—Strong

THE "KEWANEE" UNION

Is always satisfactory because the construction is

Simple and Strong



"The Union With no Inserted Parts."

There are Only Three Simple Strong Parts
There are no Inserted Brass Pieces
There are no Inserted Parts to Loosen Pressure
There are no Inserted Brass Rings to Get Lost in Transit
There are no Inserted Pieces to Drop Out when Disconnected
There are no Inserted Pieces to be Displaced by Pipe End
There are Only Three Strong, Heavy, Simple Solid Parts

- (1) The Heavy Thread End of Brass
- (2) The Heavy Bottom of Malleable Iron
- (3) The Heavy Nut (or Ring) of Malleable Iron

All octagonal in form and easy to move with a common monkey wrench. Detailed information will be supplied on request

NATIONAL TUBE COMPANY

General Sales Offices:
Frick Bldg., Pittsburgh, Pa.

District Sales Offices
in the larger cities.

Export Representatives: United States Steel Products Company, New York.

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Industrial Works. Bay City, Mich.

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The S. R. Smythe Co. Pittsburgh.

Wickes Brothers Pittsburgh.

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Browning Engineering Co.
..... Cleveland, O.

Cleveland Crane & Eng. Co.
..... Wickliffe, O.

H. J. Koontz Pittsburgh.

Industrial Works. Bay City, Mich.

H. J. Koontz Pittsburgh.

Link-Belt Company Philadelphia.
Northern Engineering Works
..... Detroit, Mich.

CRUCIBLES.

Jos. Dixon Crucible Co.... Jersey City.

CRUCIBLE STEEL.

McKenna Bros. Brass Co.... Pittsburgh.
Wm. Jessop & Sons, Ltd.... New York.

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CEMENT-HANDLING MACHINERY

Link-Belt Company Philadelphia.

CHAINS.

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Link-Belt Company Philadelphia.

CHAINS (Dodge, Ewart, Ley, Monobar, Etc.).

Link-Belt Company Philadelphia.

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Link-Belt Company Philadelphia.

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Link-Belt Company Philadelphia.

CHAIN SLINGS.

Link-Belt Company Philadelphia.

CONVEYORS (Belt).

Link-Belt Company Philadelphia.

CONVEYORS (Flight).

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Link-Belt Company Philadelphia.

CONVEYORS (Screw).

Jeffrey Manufacturing Co.. Columbus, O.
Link-Belt Company Philadelphia.

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W. N. Kratzer Co. Pittsburgh.
W. G. McKenney & Co. Pittsburgh.
Wm. B. Scaife & Sons Co.. Pittsburgh.

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Southwark Foundry & Machine Co. Philadelphia.
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Kennedy, Julian Pittsburgh.

CONTRACT ROLL TURNING.

The Heinle Company Pittsburgh.
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Wickes Brothers Pittsburgh.

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DREDGING MACHINERY.

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DREDGE CHAINS.

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DREDGES.

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Chambersburg Engineering Com-
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DRIVE CHAIN.

Link-Belt Company Philadelphia.

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Wickes Brothers Pittsburgh.

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Scaife Fdry & Mach. Co.... Pittsburgh.

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Link-Belt Company Philadelphia.
Julian Kennedy Pittsburgh.

G. W. McClure Son & Co. ... Pittsburgh.
Morgan Construction Co.
..... Worcester, Mass.

Smythe, The S. R. Co.... Pittsburgh.
Wm. B. Scaife & Sons Co.. Pittsburgh.
United Eng. & Fdry Co.. Pittsburgh, Pa.
William Swindell & Bro. ... Pittsburgh.

ENGINEERS—INSPECTING.

Gulick-Henderson & Co.... Pittsburgh

ENGINEERS—LABORATORY.

Gulick-Henderson & Co.... Pittsburgh

ENGINEERS (Mechanical).

Link-Belt Company Philadelphia.

EQUALIZING GEARS.

Link-Belt Company Philadelphia.

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Chambersburg Engineering Com-
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Wm. B. Scaife & Sons Co.. Pittsburgh.
Heppenstall Forge & Knife Co....
..... Pittsburgh.

Mesta Machine Co. Pittsburgh.

FORGING PRESSES.

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pany Chambersburg, Pa.
United Eng. & Fdry Co.. Pittsburgh, Pa.

FOUNDRY EQUIPMENTS.

Baird Machinery Co. Pittsburgh.
Cleveland Crane & Eng. Co. Wickliffe, O.
Meehan Boiler & Con. Co. Lowellville, O.
Northern Engineering Works
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Wickes Brothers Pittsburgh.

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Dover Fire Brick Co. Cleveland, O.
Kier Fire Brick Co. Pittsburgh.

Pittsburgh-Buffalo Co. Pittsburgh.
Stuart Fire Brick Company. Pittsburgh.

Sharon Fire Brick Co. Sharon, Pa.
Jos. Soisson Fire Brick Co.
..... Connellsville, Pa.

Sandy Ridge Fire Brick Co....
..... Sandy Ridge, Pa.

The Stowe-Fuller Co. Cleveland, O.
United Fire Brick Co. Pittsburgh.

W. H. Wynn & Co. West Decatur, Pa.

FITTINGS (Electric Crane).

Electric Con. & Mfg. Co.. Cleveland, O.
FITTINGS (Malleable and Cast Iron.)
National Tube Co.... Pittsburgh, Pa.

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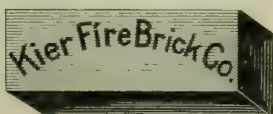
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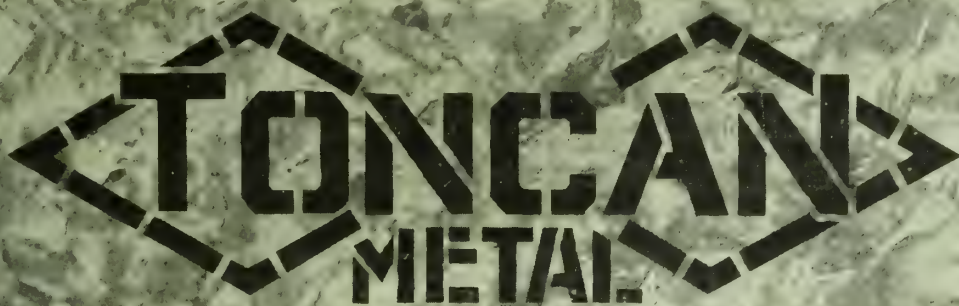
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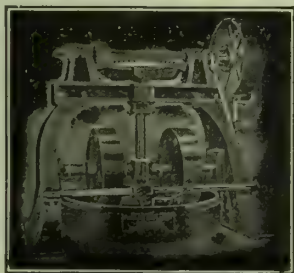
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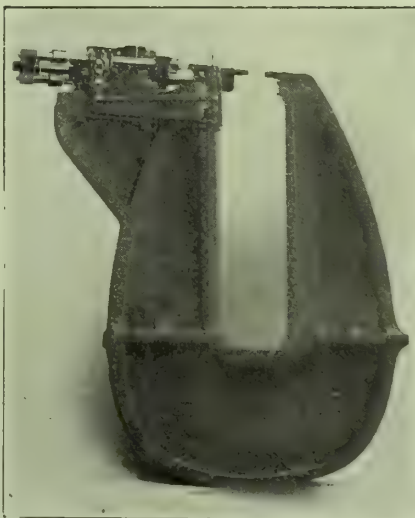
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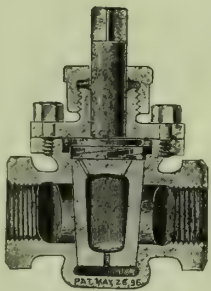
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INDUSTRIAL WORLD

Published Weekly in the Interest of Iron, Steel, Coke and Allied Industries.

43d Year. No. 38.

PITTSBURGH, PA.

MONDAY, SEPTEMBER 20, 1909.

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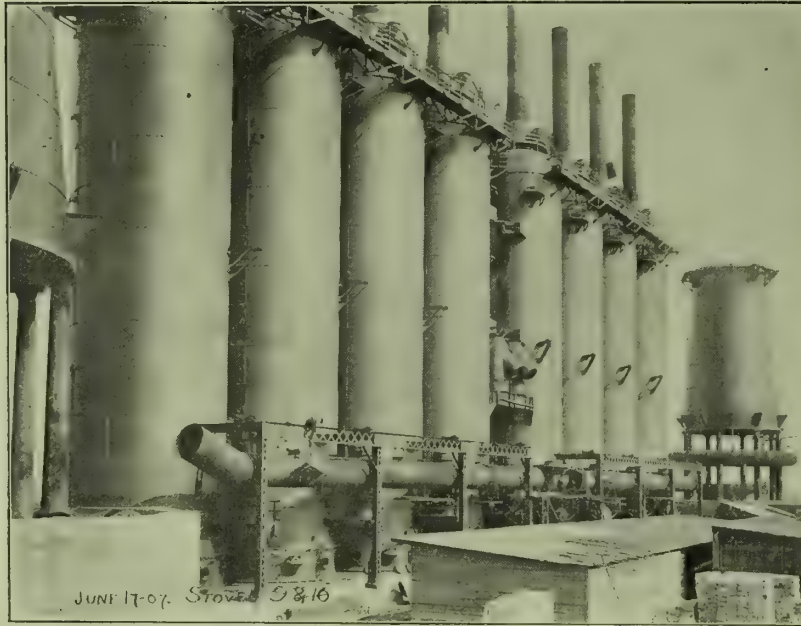
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INDUSTRIAL WORLD

FORTY-THIRD YEAR.

PITTSBURGH, PA., SEPT., 20, 1909.

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Summary of General Iron and Steel Markets

BESSEMER IRON TAKES SENSATIONAL LEAP AS RESULT OF RUMORS OF PURCHASES BY STEEL CORPORATION IN OPEN MARKET—LONG-DELAYED ANNOUNCEMENT OF ADVANCE BY CARNEGIE STEEL COMPANY ON BARS, SHAPES AND PLATES IS FINALLY MADE—COKE PRICES SOAR, COMPELLING FURNACE INTERESTS TO ASK STIFF ADVANCES IN ALL SECTIONS OF THE COUNTRY.

ON the threat of a purchase of 25,000 to 40,000 tons of Bessemer pig iron in the open market by the United States Steel Corporation, Bessemer took a sensational flight in the Pittsburgh district during the past week, in which other grades of pig iron participated to a greater or lesser degree. The attainment of a new level of \$17.50, Valleys, for Bessemer, for immediate deliveries, with the probability of prices for the first quarter of 1910 soaring past the \$18 mark, gave the country a start and created a flurry in both Eastern and Western markets.

The first sale in Pittsburgh at the new price was made just before the close of business on Friday, when an Eastern steel company took 20,000 tons of Bessemer for delivery during the last quarter at a rate equivalent to \$17.50, Valley. The sale is said to have been made by W. P. Snyder & Company.

The promised purchase by the Steel Corporation had not materialized when the market closed for the week, though there is little question but the combine will shortly need some iron in addition to the output of its own furnaces. A good part of the tonnage supposed to be wanted is said to be optioned, and may therefore still be taken up at the \$17 price. There is little question, however, that \$17 Bessemer has disappeared from

the open market for the time being, whether the Corporation takes the tonnage under consideration or not.

The week witnessed a flurry in other grades of pig iron in the Pittsburgh market. Basic is firmly established at \$16, while No. 2 foundry for immediate delivery was quoted at \$16.25 and as high as \$16.50, it being doubtful whether any considerable tonnage could be negotiated even under the most favorable conditions short of the former figure. Purchases were not heavy, and the advances of 50 and 75 cents over the figures given above on inquiries for 1910 deliveries left buyers cautious. The present advances in price, however, cannot be viewed as phenomenal, no matter how unexpected they may be; for coke already is ruling at near the \$2.50 mark, an advance of \$1 a ton over the low point of the past year, and an advance in Lake Superior ore of 50 cents a ton is expected the first of January, which will restore the 1907 level in the ore market.

The Eastern pig iron market showed a distinct advancing tendency, Philadelphia reporting an effort to put No. 2X foundry up from \$18 to \$18.50, with some tonnage taken at the higher figure. Birmingham furnaces meantime withdrew the current quotations of \$13.50 for fourth quarter of the year and \$14 for

first half of next year, placing prices a half dollar higher on both deliveries. Sales of Bessemer thus far this month in Pittsburgh district aggregate at least 80,000 tons, including 50,000 tons to the Jones & Laughlin Steel Company, while it is calculated the sales of basic and foundry irons aggregate 60,000 tons more. It is estimated that there are not more than 90,000 tons in stock in the Valley furnace yards at this time.

During the week the Carnegie Steel Company withdrew its prices of 1.35c on bars and 1.40c on shapes and plates, advancing its minimum \$1 a ton, to 1.40c and 1.45c on bars, and 1.45c to 1.50c on shapes and plates, according to tonnage, specifications and delivery. Some of the low priced contracts taken in the second quarter of the year expire October 1, and the privilege of renewal will be given at the new minimum, for fourth quarter, and in some cases for first quarter of next year. The advance was followed by all independents who had not already taken the initiative in putting the prices up.

An advance in steel pipe is imminent. The action will probably be taken within the coming 10 days. Iron pipe has advanced \$1 to \$1.50 a ton under the pressure of large new business. Better prices also are being obtained for structural materials, while a semi-famine in billets in Pittsburgh and further west has resulted in the payment of as high as \$28 on occasions for prompt shipment. Roll and nut manufacturers have advanced prices on bolts 5 per cent, the advance amounting to \$2 on square nuts and \$3 on hexagonals.

The bi-monthly settlement of the bar iron wage scale made during the week by the iron manufacturers, disclosed average realized prices for July and August on bar iron shipments of 1.35 cents, as against 1.29 cents for the previous two months. This advanced the puddling wage rate 25 cents, to \$5.37½. The settlement for the months of September and October, from present prospects, will show almost as great an advance over the new rate.

Reports of possible importations of foreign pig iron, even at the new high price levels, have been discredited in the East. The most remarkable increase in business during the week just ended was shown in the steel rail trade, where orders totalling close to 250,000 tons were closed during the six days ending Saturday.

Sheet and Tin Capacity is Increased; Strikers Abandon Fight at Some Points

COMBINE MAKES STATEMENT OF THE OPERATING CONDITIONS. MORE RESTRAINING ORDERS AGAINST STRIKERS—TROUBLE SPRINGS UP IN LA BELLE COM- PANY'S PLANTS.

The American Sheet & Tin Plate Company has made public a report showing the capacity of the sheet and tin plate mills of the company in operation at the beginning of last week, as indicating the extent to which the strike of the union sheet and tin plate workers has been broken. The report shows that out of 221 serviceable tin plate mills, 150 were in operation last week, or 68 per cent of the whole, a gain of 5 per cent during the present month. In the sheet plants, out of a total of 186 serviceable mills, 145 were in operation, or 80 per cent. The figures, giving the mills in operation per plant, follow:

Tin plate—American, at Elwood, 17 mills; Cambridge, at Cambridge, O., 7 mills; Chester, at Chester, W. Va., 7 mills; Crescent, at Cleveland, 6 mills; Monongahela, at Pittsburgh, 8 mills; National at Monessen, 25 mills; New Castle, 14 mills; Pennsylvania, at New Kensington, 8 mills; lower Kensington, 8 mills; Sabraton, at Morgantown, W. Va., 10 mills; Sharon, at South Sharon, 14 mills; Shenango, at New Castle, 15 mills, and United States, at Demmler, 11 mills.—Total, 150 mills.

Sheet—Vandergrift, 37 mills; Leechburg, 11 mills; Hyde Park, 6 mills; Saltsburg, 4 mills; Canal Dover, 11 mills; New Philadelphia, 12 mills; Guernsey, at Cambridge, 11 mills; Midland, at Muncie, Ind., 7 mills; Piqua, O., 1 mill; Old Meadow, at Scottdale, 8 mills; Scottdale, at Scottdale, 9 mills; Struthers, at Struthers, O., 6 mills; Wellsville, O., 10 mills, and Wood mill, at McKeesport, 12 mills.—Total, 145 mills.

Following the court injunction issued 10 days ago at Youngstown, O., the company last week secured from Judge A. G. Dayton, of the United States court at Phillippi, W. Va., a temporary injunction restraining the unionists from interfering with the operation of the Chester, W. Va., plant. The restraining order was granted September 1, but was not made public till last Wednesday. The hearing to make the order permanent will be heard in Wheeling on the first Monday in October.

As a result of continued brawls around the New Castle tinplate plants of the company, the sheriff of Lawrence county on September 15 asked for the services of the State constabulary. Several shooting affrays have taken place within the past 10 days, two of which may prove fatal. Additional special policemen have been sworn in. Several of the

strikers' pickets at the Struthers, O., sheet mill have been fined at Youngstown for contempt of the injunction there.

As a result of meager funds, officers of the Amalgamated Association informed the striking workmen during the week that no strike benefits would be paid for the present except in cases of actual distress. Under the Amalgamated Association's by-laws, the payment of strike benefits should have begun September 15. During the week, many of the strikers at the Sharon and New Castle plants left to obtain work at the N. G. Taylor tin mills at Cumberland, Md., and other independent plants. Numbers of them have been engaged, it is said, to go to work at the new Jones & Laughlin plant at Aliquippa, and a new independent shop at Buffalo.

The company gave all employees at Sharon and New Castle until September 10 to return to work. Mill managers announced that there would be no "black-listing" of the striking men. President E. W. Pargny, of the company, when interviewed in Pittsburgh by a New Castle minister in behalf of the men, said there could be no change in policy in regard to the Amalgamated on the "open shop" question.

The Youngstown, O., Chamber of Commerce has made active efforts to secure the co-operation of the Ohio authorities in an attempt to arbitrate the "open shop" trouble at the plant of the Youngstown Sheet & Tube Company. Conferences with President J. A. Campbell and other officers of the company resulted in a positive refusal to submit the affair to outsiders to arbitrate.

LaBelle Works Involved.

As a result of the discharge of several members of a newly-organized Amalgamated Association lodge at the sheet and jobbing mill of the LaBelle Iron works, at Steubenville, O., during the week, about 250 mill workers and 250 miners employed by the company quit work. The men say they will insist on the recognition of the union.

Rumor of Bray Mill Resumption.

It is rumored at Sharon, Pa., that the Bray continuous sheet mill at South Sharon, which has long been idle, may soon be placed in operation. Should the plant go on in full, as is confidently expected, it will furnish employment to about 450 men.

The Bray mill is owned by the American Sheet & Tin Plate Company, but

since it was built it has only been operated at intervals. It was the first mill of the kind built in the country under the Bray patents, which covered the continuous process, and although the devices were found to be successful, steady operation was impossible owing to litigation between inventors and the company. For a time before the depression the plant was in full operation.

BI-MONTHLY SETTLEMENT.

Puddling Rate Is Advanced a Full 25 Cents.

The bi-monthly settlement of the bar iron scale was made by the Republic Iron & Steel Company and other union manufacturers with the Amalgamated Association during the week just ended.

The settlement showed an average realized price of iron bar shipments for July and August of between 1.35 and 1.40, which is a gain of one-tenth over the previous adjustment and advances the puddling rate 25 cents from \$5.12½ to \$5.37½.

The previous wages had been based on an average between 1.25c and 1.30c. The iron mills affected are those of the Republic Iron & Steel Company and 22 independents, the number of men involved being approximately 10,000.

The average is taken from selected iron mills in the Mahoning valley and Cleveland, base sizes only being considered. The average of sales for a given two months controls the wages for the following two months. The averages disclosed, on shipments in the months named, have been as follows:

	1906.	1907.	1908.	1909.
Jan.-Feb.	1.619	1.599	1.493	1.36
Mar.-Apr.	1.626	1.656	1.450	1.322
May-June	1.599	1.654	1.354	1.299
July-Aug.	1.551	1.653	1.330	1.350
Sept.-Oct.	1.554	1.626	1.346	
Nov.-Dec.	1.573	1.575	1.343	

Average 1.587 1.622 1.386

The average was exactly 1.350c, not exceeding 1.35c, but giving the men an advance of two notches, the then wages having been based on the 1.25c level.

Pittsburgh Needs Dumping Grounds.

Allegheny county iron and steel manufacturers are badly in need of dumping grounds for slag. The United States Government, which is making a fill of 40,000 cubic yards along the Allegheny river just above the city, is getting all the material free from the manufacturers. The United States engineers estimate that within a short distance of Pittsburgh they could take care of 1,000,000 cubic yards of dirt and slag at the present time to prevent the washing away of the banks of the rivers.

The project of raising Pittsburgh streets above flood stage can be accom-

plished, according to engineers, without the payment of a cent for material. Steel company engineers say that Pittsburgh's industries could furnish enough ashes and slag to do the job and still have enough left in a year to seek another place to put the surplus. Manufacturers are now paying the railroads a tidy sum to haul ashes and slag away, and the railroads are only too glad to secure a dumping ground near Pittsburgh that requires only a short haul.

NEW EQUIPMENT ORDERED.

Additional Rolls for Western Plants.

Contracts have been placed with the United Engineering & Foundry Company, Pittsburgh, by the National Tube Company, for a 14-inch continuous mill and other equipment, to be installed in the Lorain, Ohio, plant; Inland Steel Company, Chicago, 12 stands of 28-inch hot mills, four stands of 24-inch cold rolls, squaring shears, sheet levelers, roll lathe and other equipment.

Youngstown Furnace Contracts.

The Youngstown Sheet & Tube Company has let the last of its contracts for the new blast furnace, to be built at its Youngstown plant—to take the place of the Alice furnace, at Sharpsville, which the company sold last month to the Thomas D. West Company, of Youngstown. The new furnace will be of 500-ton capacity, and the third of the company's Youngstown group. The Niles Brick Company secured the contract for the lining of the furnace; the Westmoreland Brick Company will line the stoves; the William Todd Company, of Youngstown will build the blowing engine; the Huber-Mason Company, of Chicago the ore, coke and limestone bins; the Otis Elevator Company the hoisting engine and the electric apparatus, and the Babcock-Wilcox Company will install the 500-horsepower boilers and six smaller boilers for the puddle mill. The furnace is to be ready for operation by June, 1910.

New Boilers and Equipment.

George T. Ladd, Farmers Bank building, Pittsburgh, reports the sale of six horizontal water tube boilers, manufactured by the Bass Foundry & Machine Company, to the Pennsylvania Railroad Company. The installations will be made on the lines west of Pittsburgh, the boilers being installed at Dola, Grafton and Millbrook, Ohio. For the Taylor Engineering Company, a 100-ton concentrating mill including buildings and equipment, has been contracted for, to be installed by the Silver Cliff Mining Company, Cobalt, Ont. The latter company is composed of Alexander Peacock, D. M. Clemson, Thomas Morrison, A. C.

Dinkey and other Pittsburgh capitalists.

Mr. Ladd has also sold about 500 tons of wheels for heavy rope drive to the Phillips Sheet & Tin Plate Company, National Tube Company, for the Lorain, Ohio, plant, and the Ontario Iron & Steel Company, Ontario, Canada.

Driggs-Seabury Extensions.

Contracts for much equipment in connection with the Driggs-Seabury Ordnance Company's extensions at Sharon, Pa., announced by the Industrial World last week, are pending. W. B. Scaife & Sons, of Pittsburgh, have been awarded the contract for supplying the structural steel work necessary for the addition. The building will be erected by the Driggs-Seabury Company, the Pittsburgh concern having received only the contract for making the necessary steel. When the machine shops are complete \$100,000 worth of new tools and equipment will be placed in them. This equipment includes 47 different kinds of lathes.

Work on the projected addition to the assembly room of 100x97 feet is expected to be started as soon as the machine shop is finished. The contract for the structural steel for this building has not yet been let.

Power for Aliquippa Plant.

The sheet and tin-plate mill of the new Aliquippa works of the Jones & Laughlin Steel Company, on the Ohio river, below Pittsburgh, will be served with power to operate a number of direct-current motors, through a rotary converter, from a 500-kilowatt, 6,600-volt, three-phase, 60-cycle Westinghouse turbo-alternator. The fuel used in the boiler plant will be coke-oven gas, and the turbine will operate on a steam pressure of 150 pounds, exhausting into a vacuum of 28 inches.

Equipment at Hazelton Mills.

The C. & G. Cooper Company, Frick building, Pittsburgh, has been awarded a contract by the Republic Iron & Steel Company, for a 900-horsepower cross compound condensing engine, to be direct connected to a 600 KW direct-current generator, to be installed in the new pipe mills being erected at Hazelton, Ohio.

Water Plant Installation.

The Reineke-Wagner Pump & Equipment Company, Pittsburgh, reports the sale of a number of private water plant installations, one of which was a plant for the Butler Country Club, Butler, Pa.

Big Order for Grant Drills.

The Chicago Pneumatic Tool Company, of Franklin, Pa., has just received an order from a southern iron mining

company for 200 Chicago giant rock drills and mountings. Tests were made of various drills and the Franklin article came out ahead. The company is also building 100 Rockford motor cars which are generally replacing the old hand car used by railroad section men. Motive power for the Rockford car is supplied by a four-cycle gasoline engine, and the car will carry 10 men with all necessary tools for track purposes.

New Nut Works at Cleveland.

The Mesta Machine Company secured contracts in two days last week aggregating \$240,000. Among them was one for the complete mill equipment of the new steel plant of the Upson Nut Company, Cleveland. This order includes 46 x60-inch reversing engines, a complete 24-inch blooming mill, including shears, tables, etc. The auxiliary machinery will be electrically driven, as will also be the screw-down on the blooming mill. Deliveries will be made early next spring. The Mesta Machine Company has also secured a contract from the Forged Steel Company, Butler, Pa., for an all-steel motor-driven shear, which will cut hot slabs 6 inches thick by 48 inches wide, this being one of the largest shears of this kind ever constructed.

Another contract received by the Mesta company was from the Tennessee Coal, Iron & Railway Company, of Birmingham, Ala., for one 40 by 60-inch Corliss engine to cost \$30,000, and one from the Dunbar Furnace Company, Dunbar, Pa., for one 44 by 60-inch long crosshead blowing engine to cost \$35,000.

Wilkes Mill Goes on Iron Plate.

Workmen have under way improvements at Sharon, which will remodel the Wilkes rolling mill at that place to produce tin plate from all pig iron muck bar. Preparations for resuming work at the Wilkes rolling mill are fast nearing completion, and it is expected that the plant may be in operation in from two to three weeks. When the mill is started and the manufacture of iron tin plate begun, the plant will employ 200 skilled mechanics.

The pickling vats in connection with the tin mill are completed and the workmen are now engaged in erecting the tinning department.

The company, in addition to its new product, will make muck bar and iron sheets. When the improvements are completed the company's plant will consist of the following: Bar mill building, about 40x185 feet, containing an 18-inch bar mill, five double puddling furnaces, squeezer, etc.; sheet mill building, about 110x160 feet, containing one hot and one cold mill, annealing furnace, one

bar and two tin furnaces, pickling tanks, cutting and corrugating machinery, a 15-ton Cleveland electric traveling crane, etc.; tin department, occupying a new building, set on concrete piers, with iron roof and siding, about 45x80 feet, containing one Morewood tinning pot and other necessary appliances. A new Russell doubling shear and a 48-inch squaring shear are to be installed in the sheet mill. The boiler equipment consists of eight Wheeler water tube boilers, aggregating 1,300 horsepower.

The Wilkes Rolling Mill Company has sufficient land on which it can erect additional buildings as required. Its new tin department will produce about 10 tons daily. The company first organized 18 years ago.

Jones & Laughlin Extensions.

The Jones & Laughlin Steel Company has work well under way on its new 10-inch bar mill at the Southside plant, to cost \$300,000, and on a spike factory at the Soho plant to cost \$200,020. The mill will be placed in operation December 1.

The new mill will roll round, flat and square bars and will have a daily capacity of 400 tons. It will be equipped with a continuous heating furnace and will use one and three-fourth and two-inch billets 30 feet long. The hot bed will be of the Morgan type. The mill is being especially built to provide spike squares for the new spike factory.

The spike factory contains six automatic machines for making railroad spikes and four machines will be installed. The factory is being housed in steel buildings. The capacity of the plant will be 2,000 kegs of spikes a day.

New Axle Plant.

Work on the construction of the plant of the Spears Axle works in South Warwood, W. Va., near Wheeling, has been started and the building will be rushed to completion. The plant will be located on the east side of the Pan Handle railroad tracks and will be much larger than the plant at Wheeling. About 125 men employed in the South Wheeling plant contemplate moving to Warwood.

Inspect Tube Mill Site.

Officials of the Republic Iron & Steel Company and the general division officers of the Pennsylvania Company made a trip to Youngstown September 15, in a special train over the Pennsylvania lines. An inspection was made at the Hazelton furnaces and the new tube mill site at Lansingville.

Among the railroad officials was W. H. Thornton division superintendent and staff; in the Republic Steel party was W. T. Guthrie, president. T. J. Bray

vice president and general manager and T. R. Aken general superintendent of the rolling mills of the corporation. It is reported that the Republic Iron & Steel Company has applied for many additional tracks at Lansingville and the railroad officials made the trip with the Republic officers to assist in mapping out the improvements asked for. The Republic officials also visited the Brown-Bonnell plant, at Youngstown.

READY BY JANUARY 1.

Rapid Progress Being Made on New Universal Cement Plant.

Rapid progress is being made by the Universal Portland Cement Company on the construction of the new plant being built at Universal, Pa. The raw material building and trestle, burner building, transformer station, and new machine shop are practically completed and considerable of the machinery and equipment has been installed. Foundations for the finishing mill have been completed and the work of erecting the building started. The buildings are of steel and concrete construction and when completed will make the plant the largest of its kind in the country.

Eleven new kilns are being installed, which, with the nine in the original plant will make a row of 20 kilns, and when the finishing mill is completed it will contain a continuous row of 26 tube mills. The capacity of the plant will be increased from 5,000 to 10,000 barrels per day, and if the present rate of construction is maintained the new plant will be ready for operation by January 1.

New Enterprises in Ohio.

The Columbus Bolt Works, of Columbus, Ohio, is building a large addition to its warehouse.

The Standard Chain & Manufacturing Company has been organized in Kent, Ohio, with a capital of \$18,000.

Car and Foundry Equipment.

The American Car & Foundry Company has sent to the trade an inquiry for a 375-horsepower gas engine and a 220 volt current generator, for its Huntington, West Virginia, plant.

Receiver for Damascus Tool Steel Co.

Allegheny county courts on September 11 appointed S. M. Whetmore receiver for the Damascus Tool Steel Company, of Carnegie, as a result of a bill in equity filed in common pleas court No. 1, by the Carbon Steel Company. The defendant company joined in the application.

In the bill of complaint the Carbon Steel Company states that it is a creditor

of the Damascus Tool Steel Company to the amount of \$22,000 for material furnished. It is set forth that the plant of the Damascus company is valued at \$108,000, and that there is material on hand valued at \$19,000. The company, it is said, is unable to secure sufficient working capital, and certain creditors are threatening to secure judgment. The plant was built in 1897 and was originally operated by the Damascus Nickel Steel Company, of Philadelphia. It was acquired by the present company in 1907.

Engineers Hold Election.

The Pittsburgh section of the American Institute of Electrical Engineers held its first fall session September 14. The subject of the meeting was "Industrial Motor Applications." Ten-minute papers were read. Among those who participated in the discussion were A. M. Dudley, H. C. Specht, F. A. Rew, W. O. Peale, J. M. Barr, C. W. Drake, H. D. James and B. Wylie, of the Westinghouse Electric & Manufacturing Company, and H. J. Sage, district manager of the Crocker-Wheeler company.

Preceding the meeting an informal dinner was given at the University club. At the close of the session the annual election was held and resulted as follows: C. B. Aul, chairman; E. B. Tuttle, secretary; executive committee, R. A. L. Snider; B. P. Rowe, W. Edgar Reed; H. Muller and W. E. Moore.

Ready to Resume at Waynesburg.

Within three weeks, the Waynesburg (Pa.) Forge Sheet & Tin Plate Company's plant will resume after an idleness of five years. As stated by the Industrial World two weeks ago, the plant has been bought by local interests. The plant when built did a thriving business. Finally it had to close because of the depression. It has six mills, with eight tin stacks and two galvanizing pots, and is able to roll either steel sheets or tin plate and finish the same. The new company secured the property for \$22,000.

Ohio River Dam Contract.

The Republic Manufacturing Company, Northside, Pittsburgh, is operating full time and has orders which indicate that it will be necessary to work the plant double turn. The company has orders for a number of castings for the navy yards at Brooklyn, N. Y., and at Charleston, S. C., and a contract for material to be used in the construction of Dam No. 13, Ohio river. The company is also building a number of Thomas spacing tables for the Standard Bridge Tool Company, machine tools of special design, and a number of special patterns.

FOUNDRYMEN IN SESSION.

Congressman Burke Discusses the Benefits from the Chinese Loan.

Members of the Pittsburgh Foundrymen's Association held the first meeting of the season at the Fort Pitt hotel, Pittsburgh, September 13, after enjoying a dinner and transacting routine business listened to discussions by two entertaining speakers.

Dr. J. G. Holmes, chief of the United States Geological Survey, spoke briefly of the work being accomplished by the Arsenal Testing Station at Pittsburgh. He impressed on the members of the association that the experimental station is the property of the public and that they are welcome to inspect it at any time.

The speaker stated that one of the paramount objects in locating the station in Pittsburgh, had been investigation of the fuel supply of the country, and the possibility of making a satisfactory quality of coke from the lower grades of coal. This, he stated, should be a matter of interest to the members of the association, most of whom are purchasers of this kind of fuel and interested in perpetuating the supply. He called attention to a paper recently published by Dr. Richard Moldenke, in which the writer advised the iron and steel manufacturers and those engaged in research work to keep in touch and aid each other with their practical knowledge, a situation desired by those at the Government experiment station.

A second object is an investigation of structural material, and the third an investigation of mine explosions with a view of preventing fatal accidents. Both subjects were referred to briefly.

Congressman J. Francis Burke discussed "The New Tariff and Its Effect on Foundry Material." He expressed the opinion that it will give general satisfaction not only to those identified with the foundry interests, but all other manufacturing lines. He referred to concessions demanded by representatives of central and western sections of the country and expressed the opinion that American push and energy and ingenuity will enable the native foundry interests to compete favorably with imported products. He referred to the rapidity with which manufacturing interests arrived at an adjustment of conditions immediately after the passage of the bill and within a few weeks had progressed from a condition of practical stagnation to normal, after predictions by the most optimistic that at least six months would be required to reach a state of prosperity. The speaker paid a tribute to Dr. Holmes and his assistants. He then referred to the necessity for an American merchant marine and showed

a number of the advantages it would give Pittsburgh foundrymen. The merchant marine, he declared, was a stepping stone to the advantages secured by German and English capitalists in establishing banks in Central American and South American republics, and to the Chinese loan which these two nations attempted to capture, in which they were defeated by Secretary of State Knox.

The Chinese loan, the speaker said, was largely for national and municipal improvements, and the interests furnishing the funds always are permitted to name the engineers, purchasing agents and general managers of the proposed railroads and other improvements. These concessions are demanded for the protection of the capital invested; but they also assure the placing of orders for all material and equipment with manufacturers directly or indirectly connected with the parties making the loan.

Mr. Burke is seriously opposed to permitting European nations getting the cream of the business in the southern republics which practically owe their existence to the United States, but realizes that it will be impossible to prevent them from doing so without American ships to carry American products to foreign markets.

NEWELL CHEMICAL PLANT.

Contracts Let for Buildings—Heavy Machinery Equipment.

The General Chemical Company, with headquarters at 25 Broad street, New York, is in the market for large orders of equipment for the new plant at Newell, Pa., just out of Pittsburgh. The contracts for the buildings, which will cost \$64,400, were last week awarded to the Nicola Brothers Company, Farmers' Bank building, Pittsburgh, Pa., and it is understood that the largest of the buildings to be erected will be about 200 feet square. The plant will include several other structures and the buildings are to be of steel and concrete construction. It is stipulated that they are to be completed by December 22, and before that time, it is said, the company will buy considerable machinery. A power plant to be of 400 to 500 horsepower, will be installed, together with considerable iron working machinery, generators, pumps and conveying machinery. It is the company's idea at present to install gas engines to be operated by natural gas.

Increases Sand Output.

The Dunbar Furnace Company is operating one of the largest sand producing plants in Western Pennsylvania at Dunbar, Pa., and has recently made a

number of improvements in the equipment of the plant to increase its capacity, one of which was the installation last week of a dryer with a capacity of 30 tons per hour. The company reports its sales of silica sand to be increasing steadily and expects the sales for the present year to surpass those of 1907.

WESTINGHOUSE DIVIDEND.

Extra Distribution of 2½ Per Cent, Making 4 Per Cent in All.

On September 15 the directors of the Westinghouse Air Brake Company declared the regular quarterly dividend of 2½ per cent and an extra dividend of 1½ per cent, making 4 per cent in all, or \$2 a share. This is the first extra dividend declared on the stock for more than a year, and it means an additional \$210,000 cash for distribution among stockholders. The total dividend amounts to \$560,000, which will be disbursed on October 9.

Another event which is now looked forward to with much confidence is a resumption of dividends on Westinghouse Electric first preferred. This dividend, which is cumulative, was suspended for the last quarter of 1907, when the company went into the hands of receivers. So far this year, however, business has been increasing at a gratifying rate, and the total sales for August were in excess of the total for the same month in 1906. Holders of Electric first preferred stock, therefore, are looking for a restoration of dividends in the near future.

To Equip New Coke Plant.

The Connellsville (Pa.) Iron works have closed a contract with the Franklin Coke Company, to furnish a complete coking plant near Tippecanoe, where a string of ovens will be erected at once. The Connellsville company is to furnish everything in the way of mining equipment for the company, from coke scrapers to mine cars and locomotives.

Traction Construction Contract.

Pihl & Miller, constructing engineers, Pittsburgh, have been awarded the contract for the construction of 32 miles of traction line for the Pittsburgh, Monongahela & Washington Railways Company. J. W. Bridge, of Monongahela, Pa., will be general manager of the road and will superintend the construction of the line.

Steel Foundries Plant Resumes.

Orders have been received at the Sharon, Pa., plant of the American Steel Foundries Company, to resume in full October 1. When the plant resumes it will employ about 400 men. By the first

of the year it is expected that the plant will be running full time, when at least 700 men will be necessary. The plant has been idle for almost two years, due to the long-continued depression. Many repairs are necessary because of the long idleness. The local plant is the last of those owned by the Steel Foundries Company to start. The Franklin plant resumed last week.

TUBING FOR DERRICKS.

Quantities of It Have Been Going Into the Oil Fields.

Much comment was occasioned last spring by an article which appeared in the *Industrial World* during March, under the title, "The Conservation of Our Forests, in which special reference was made to derricks for oil or gas wells built entirely of pipe. Oil men say the use of steel tubing for derrick building has greatly increased in the oil fields during the past summer. An officer of the firm of Lee C. Moore & Company, Pittsburgh, which makes one type of pipe derrick, says there have been steel pipe derricks sold since April last of one pattern sufficient to have used up over a half-million feet of timber, the amount of new tubing that was used having totaled 200,000 lineal feet.

The makers of the pipe derrick claim the oil men prefer tubing as material for the derricks to structural material, or a combination of structural steel timber—the extreme simplicity of the pipe design permitting the execution of either the shop or field work without the aid of the skilled expert. It is claimed, too, that when erected by unskilled workmen there is less chance for bungling in the erection of the derrick, since it cannot be put up in any but the correct way.

Want Water Works Equipment.

At the meeting of the borough council of Conway, Pa., October 4, arrangements will be made for placing contracts for equipment for a water works to supply the borough. Plans have been prepared by James P. Leaf, engineer, Rochester, Pa., which provide for a 50-horsepower gas engine, a 500,000-gallon pump, three miles of cast iron pipe ranging from 4 to 10 inches, 12 valves, 20 fire hydrants, and a 60,000-gallon wrought iron tank.

In April, 1908, the borough council voted to issue bonds for \$20,000 with which to erect a plant, but an injunction was issued on behalf of the Beaver Valley Water Company, restraining the borough from issuing the bonds. The injunction was dissolved September 10, and the borough permitted to proceed with the construction of the plant.

SOLD IN A LUMP.

Huge Panama Scrap Sale Brings Low Price Offers.

Bids were opened at Washington, D. C., September 16, by the Isthmian Canal Commission, for the purchase of a quantity of scrap iron and steel estimated at from 100,000 to 140,000 tons, composed of the wreckage of engines, boilers, dredging, excavating and other machinery used by the French and American workmen in the excavations for the Isthmian canal.

As the material is to be delivered in New York at the rate of 1,000 tons per week and the deliveries are to extend over a period of three years, coupled with the fact that bidders were required to deposit security in the sum of \$50,000 for the performance of the contract and take the material assigned to them without choice or assortment being made, it is understood that comparatively low prices would be offered by the few Pittsburgh dealers who submitted propositions. It will be possibly two weeks before announcement is made of the acceptance of the propositions submitted. None of the scrap is to be classified, all being sold in a lump.

"LINES EAST" CONTRACTS.

Pennsy Makes Important Awards of Main Line Work.

Contracts have been awarded to the Millard Construction Company, Philadelphia, for the extensive improvements to be made by the Pennsylvania Company at Greensburg, Pa. It is estimated that the contemplated improvements will cost \$865,000, and will be one of the largest track improvements made in the Pittsburgh district in several years.

The contract provides for cutting out the 275-foot tunnel under Main street, substituting a bridge and widening the roadway from two to four tracks; removing the 16-foot arch bridge at Arch street and building a 40-foot arch bridge 140 feet in length; a 100-foot tunnel and the construction of several small bridges and a new depot.

Power for New Clubhouse.

James E. McNary, Pittsburgh representative of the Clark Brothers Engine Company, has been awarded the contract for installing three units in the Pittsburgh Athletic Club building. The contracts calls for three high-speed corliss engines of 75, 100 and 150 KW capacity respectively. The engines are to be direct connected to Crocker-Wheeler generators in the light and power plant of the building. There was possibly more competition on this contract than any that has been awarded in the Pittsburgh

district during the last two years, as all makers of engines of this class represented locally were anxious to make an installation in the new million-dollar club house as much for the advertisement it would afford as for the pecuniary benefit.

NEW CARD ON STEEL EXTRAS.

Carnegie Steel Company Inaugurates Radical Change in Bars and Shapes.

Much comment has been caused among buyers and sellers of steel bars and shapes over the new classification card of extras issued by the Carnegie Steel Company. It is a radical change, but is regarded as a step in the right direction toward simplifying the bar card.

The new cards differ from the old in that the extras are all net and that the list is half the extras of the old list, it being the purpose to quote a base price plus net extras.

In the future one base price will be quoted, applying to all material on the card, and net extras will be added instead of half extras, as heretofore. Several new sizes are introduced. The quantity differentials are advanced 5 cents per 100 pounds, making the differential larger for quantities of less than one ton of a size, but not less than 1,000 pounds, 15 cents per 100 pounds, and for quantities less than 1,000 pounds 35 cents per 100 pounds.

Instead of fixing the base size without extras and then quoting 10 cents higher than bar price on channels, angles and tees, 10 cents extra is charged on the card. The new card on hexagons is equivalent to a decline of 10 cents per 100 pounds, while on ovals there is a decline of from 5 to 10 cents. Half ovals and half rounds remain unchanged throughout the list. This is also true of light bars and bands.

There is no change in flat bars and heavy bands except the $\frac{1}{2} \times \frac{3}{8}$ -inch to 7-16-inch, where an advance of 5 cents per 100 pounds is quoted; 7-16 $\times \frac{1}{2} \times \frac{1}{4}$ and 5-16-inch an advance of 5 cents per 100 pounds; 7-16 $\times \frac{3}{8}$ an advance of 20 cents per 100 pounds; 7-16 $\times \frac{1}{4}$ and 5-16 an advance of 20 cents per 100 pounds, and $\frac{3}{8} \times \frac{1}{4}$ and 5-16-inch 25 cents per 100 pounds.

Independents have the adoption of the card under consideration. They have not yet decided whether to adopt it, there being some objection to cutting nominal extras in half and then charging such full rates. The change was made without consultation with the independents.

Try a Want or For Sale ad in the *Industrial World*.

BUYS BALTIMORE PLANT.

Standard Car Company Closes Negotiations for Big Eastern Shops.

Negotiations for the sale of the Baltimore Car & Foundry Company, of South Baltimore, Md., to the Standard Steel Car Company of Pittsburgh, according to a statement made by Vice President James B. Brady of the Standard company, have been completed, and all that remains now is the completing of legal details before the formal transfer of the Baltimore plant is made to the Pittsburgh company.

The Baltimore Car & Foundry Company works are located on Curtis bay, and the plant when operated full employs about 3,000 men. It has a capacity of 40 steel under-frame freight cars a day. During the financial depression in 1907 the plant was placed in the hands of receivers, and a sale of the properties three weeks ago resulted in turning them over to the Pittsburgh interests for \$1,250,000.

None of the high officials of the Standard Steel Car Company were in Pittsburgh during the week, all being in the East; but Vice President Brady, who was in New York, was quoted as saying that the sale was made three weeks ago in Baltimore. Mr. Brady said the plan of the Standard Steel Car Company is to conduct the Baltimore plant as an eastern branch of its business.

News reports of a proposal by the Frick and Mellon interests to combine the McClintic-Marshall, the Lackawanna, the Standard Steel Car and other interests in a big consolidation were given considerable prominence by the daily press during the week. Their only apparent foundation was a visit President Hansen of the car company is said to have paid Mr. Frick at Pride Crossing, Mass., and the fact that several other Pittsburgh capitalists were in Massachusetts at the same time. The reports were scouted by people well acquainted with the situation.

The South Baltimore Steel Car & Foundry Company next to the Maryland Steel Company is the largest employer of skilled labor in Baltimore. Recently the plant and other assets of the company were sold at foreclosure to satisfy claims of creditors aggregating \$1,250,000.

At Pressed Steel Car Plants.

Operations at the McKees Rocks plant of the Pressed Steel Car Company during the week continued at nearly maximum capacity. Notwithstanding some disturbance raised by the foreign element at the plant on September 15, all departments continued working. The complaints of the foreigners were

quickly silenced by their American fellow-workmen, and peace restored.

It was announced that by October 15 the Woods Run plant of the Pressed Steel Car Company will be started up for the first time in many months and about 3,000 men will be given work. Repairs are now proceeding at Woods Run.

It was announced in Washington during the week that after a careful investigation made through Federal officers, the Department of Justice has come to the conclusion that it has no case against the Pressed Steel Car Company at McKees Rocks, Pa., which was alleged to have violated the laws prohibiting peonage or enforced servitude. The company was completely vindicated by a statement made at the department following a conference in which acting Attorney General Ellis and Assistant Attorney General Russell and District Attorney General Russell and District Agent Hoagland, who made an inquiry into conditions at McKees Rocks, participated.

INDUSTRIAL FIRES.

The Week's Record.

Beaver Falls, Pa. — Fire September 16 destroyed more than half the plant of the American Ax & Tool Company, causing a loss estimated at \$75,000, covered by insurance. The forge room, grinding room, engine room, packing room and one warehouse were consumed. Several other buildings owned by the company were saved with difficulty. One hundred and twenty-five men are thrown out of work.

* * *

Harrisburg, Pa. — Steelton & Harrisburg Brick Company's plant at Ninth and Reily streets destroyed September 11, with 75,000 "green" bricks; loss \$20,000; incendiaries. Will rebuild.

* * *

Cleveland, O. — Warehouse and office building of the Fred G. Clark Oil Company, burned September 12; loss \$250,000. Fifty thousand barrels of lubricating oil destroyed.

* * *

Monroe, La. — Sawmill plant of Ouachita Lumber Company, limited, with \$500,000 feet of lumber destroyed September 4. Loss \$100,000.

* * *

Uniontown, Pa. — Boiler house and engine room of H. C. Frick Company's valley plant burned September 10; loss \$50,000.

* * *

Monett, Mo. — Forty-seven bad order cars on tracks of Kansas City Car Company destroyed September 5. Loss \$40,000.

* * *

Pittsburgh—Fire September 13 de-

stroyed charcoal house at bloom mill of Spang, Chalfant & Company's mill. Loss \$1,600.

* * *

Hagerstown, Md. — Foundry of A. T. Zentmyer damaged \$3,500 September 7. Faulty fire alarm and light water supply.

* * *

Georgianna, Ala. — Turpentine plant of H. T. Babcock & Company destroyed September 3. Loss \$3,000.

* * *

Camden, N. J. — Planing mill and furniture factory George W. Dana destroyed September 2. Loss \$40,000.

* * *

Nassau, Del. — Canning factory of Alec Preston destroyed September 10. Loss \$3,500. Incendiary.

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Wheeling, W. Va.—American Auto Repair Company's shops damaged \$2,500 September 15.

News from Damaged Plants.

Waverly, Ia. — The Kelly Canning Company, whose plant was destroyed by fire Sept. 5, expects to rebuild at once. They write the Industrial World that they will put in the latest canning machinery, and will build the factory of brick with concrete floors. They will need engines and such other machinery as is used in a canning factory.

* * *

Cincinnati, O. — The fire which visited the Cincinnati plant of the A. S. Obermayer Company, September 11 merely damaged the warehouse—no damage was done to the company's various manufacturing departments. There will be no interruption of business.

Structural Trade Needs Draughtsmen.

Young engineers having to all appearances drifted into other occupations in the past two years, has caused a scarcity of skilled draughtsmen, according to a recent comment by the New York Commercial. The demand for them has been increased by the work of municipalities, architects and various corporations, where the compensation is said to be better than can be obtained from railroads. As a result, with a return of activity in manufacturing, the number of positions reported available exceed the supply of competent men.

The greatest demand seems to be in connection with structural iron, the largest establishments engaged therein making the most strenuous effort to get such men. The opportunity afforded for varied experience and promotion is exceptional. Railways therefore are reported to be having difficulty in getting mechanical draughtsmen, and all this is encouraging for the prospective graduates of engineering schools.

La Belle Shows Year's Earnings Of Two Millions, With Good Surplus

STEBENVILLE CONCERN MAKES EXCELLENT SHOWING DESPITE INDUSTRIAL UNREST DURING FISCAL YEAR—DIVIDEND OF 8 PER CENT—INCREASE IN FIN- ISHED PRODUCTS.

Net earnings for the year ending June 30, of \$1,854,830.14 were shown by the annual report of the LaBelle Iron Company, of Steubenville, O., at the annual meeting of the company held in Wheeling, September 15. A dividend of 8 per cent was declared, amounting to \$793,120, leaving \$877,563 to be added to the surplus. President I. M. Scott's report gave the following summary of the year's operations:

Net earnings from operations after deducting charges, maintenance and repair of approximately \$517,000. \$ 1,854,830.14

Less—
Provision for exhaustion of minerals and lease values, etc. 40,436.41

Profits for year \$ 1,814,393.73

Deduct—
Interest on first mortgage bonds 143,710.00
Cash dividends at \$8 per share 793,120.00

936,830.00
Surplus for year \$877,563.73
Surplus July 1, 1908 1,435,654.48

Deduct—
Appropriation for depreciation of capital assets 250,000.00

Net surplus carried to balance sheet \$ 2,063,218.21
Balance Sheet, June 30, 1909.

Assets—
Total capital assets \$11,350,911.39
Cash held by trustee for redemption bonds 8,000.00
Inventories, product, materials and supplies \$ 2,746,039.78
Accounts, bills receivable . . . 1,166,220.60
Cash 1,335,361.75
Unexpired insurance, etc. . . . 11,312.42

Total assets \$16,617,845.94

Liabilities.

Capital stock:
Total authorized issue . . . \$10,000,000.00

Total issued—99,154 2-3 shares \$ 9,915,466.67

First mortgage 6 per cent . . . \$ 2,500,000.00

Less—Redeemed 92,000.00
In treasury 44,000.00

\$ 136,000.00

\$ 2,364,000.00

Total capital liabilities . . . \$12,279,466.67

Current Liabilities—

Accounts payable \$ 417,367.54

Taxes, taxes, royalties . . . 221,203.66

Bond interest accrued 17,765.00

Cash dividend on capital stock 198,294.00

Total current liabilities . . . \$ 854,630.20

Reserves—

General depreciation \$ 1,000,000.00

Exhaustion of minerals 219,886.48

Extraordinary repairs and contingencies 200,644.38

\$ 1,420,530.86

Surplus June 30, 1909 \$ 2,063,218.21

\$16,617,845.94

President Scott, in his annual report, says in part:

Owing to some changes in the shaft arrangement which it was found necessary to make at your LaBelle mine, this property was operated only about half the year. At your Miller mine, however, sufficient ore was taken out to keep the cost of production on a normal basis, the tonnage mined about equaling that of the previous year; the total ore production for the year being as follows:

LaBelle mine 32,207 Tons

Miller mine 227,205 Tons

Total 259,412 Tons
showing a decrease of 42 per cent as compared with the previous year.

Owing to the fact that during practically the whole of the last fiscal year, coke could be purchased in the open market at a price equal to or below the actual cost of production, and in line with the policy heretofore pursued by your company in conserving its natural resources wherever possible, your coke plant in Fayette county was closed down the greater part of the year, the property, however, being kept in such shape as to permit of prompt resumption of operations when market conditions favored it. The production for the year was 23,697 tons, showing a decrease of 64 per cent as compared with the previous year.

It is gratifying to be able to report that, owing to an increase in the volume of business, your manufacturing properties (the furnace department excepted) produced during the last year a tonnage greater than during the previous year, the increase in some lines being quite marked. With this increase in volume, lower costs naturally obtained, the production for the year and comparison with the previous year being as follows:

Pig iron 130,898 Gross Tons

Decrease 25 per cent.

Slabs and billets 201,686 Gross Tons

Increase 7 per cent.

Plates and skelp 165,625 Gross Tons

Increase 13 per cent.

Sheets 36,598 Gross Tons

Increase 315 per cent.

Tubular goods 51,532 Gross Tons
Increase 18 per cent.
Nails 187,722 Kegs
Increase 60 per cent.

There was paid out during the year in wages, the sum of \$2,254,644, the average number of employees being approximately 2,850. The average wage per man was slightly higher than that of the previous year, which is accounted for by the fact that during the last year your sheet mill department, in which is employed the higher-paid class of workmen, was in more constant operation than during the previous year, while in the case of your ore and coke departments, where the lower-paid class of workmen is employed, the reverse was true.

The value of the shipments for the year aggregated \$10,278,456, an increase of 15 per cent over the previous year.

During the year the only addition made to your plant equipment was a metal mixer, which was installed and put into operation early in July last. The company, of course, derived no benefit from this improvement during the fiscal year just closed, but from experience over the last two months, or since the mixer was put into operation, we feel safe in saying that not only will the quality of your company's product be improved by its use, but the cost of production will be substantially reduced as well.

The old board of directors were re-elected without change.

LAKE SHIPBUILDERS BUSY.

Southern Furnace Co. Wants Four Ore Boats—Large Tonnage for Year.

Advices from Chicago say the American Shipbuilding Company has closed contracts with a Southern Iron Furnace Company, for four large ore-carrying steel ships of modern type to cost about \$1,300,000, and one passenger steamer for Buffalo interests, costing \$200,000. The company now has orders on its books for the construction of nine vessels for delivery in 1910, their gross cost being about \$3,500,000. Two of the steamers now being built are for the Pittsburgh Steamship Company, the marine branch of the United States Steel Corporation, and will be among the largest bulk freight carriers on the lakes. A third of these ships was contracted for. All are to be launched from the Ecorse yards in Detroit. They will be 600 feet in length, 32 feet deep, 58-foot beam and provided with triple expansion engines. The capacity of each will be 15,000 tons.

This makes a total of 16 vessels that lake shipbuilders have closed for 1910 delivery—nine by the American Ship Building Company and seven by the

Great Lakes Engineering Works. The Great Lakes Engineering Works closed a contract two weeks ago with the Northern Lakes Steamship Company, a new Cleveland corporation, for three bulk freighters, and also has on hand an order for a package freighter.

Maryland Steel Co. Activities.

The Navy Department has formally awarded contract to the Maryland Steel Company, Sparrows Point, Baltimore, for the construction of a 535-foot collier. The company's bid for this work was \$889,600. With the securing of this contract the company will have under way in various stages of construction nine vessels, representing an aggregate value of about \$4,500,000. These include two colliers for the United States Navy.

The blast furnace, Bessemer and rail-mill departments are all running nearly to their fullest capacities. Orders are on hand for about 60,000 tons of rails, which will keep the steel departments running night and day steadily for the next two months. Among those for whom rails are being rolled are the Augusta Construction Company of Georgia, the Queensland Railway of Australia, the Florida East Coast, Baltimore & Ohio, Boston & Maine, Seaboard Air Line, Atlantic Coast Line and the Pennsylvania railroads. Three of the company's blast furnaces are now in blast, and the fourth will be placed in commission in about two weeks.

Work on the open-hearth plant, which is being erected at a cost of about \$1,000,000, is progressing rapidly, and it is expected to have the structural steel work completed and the buildings sheathed by the end of September. It is hoped to have this plant completed and in operation by next March. It will be operated on the duplex system, in conjunction with the Bessemer plant, and will have a daily capacity of 1,500 tons. It is stated that approximately 4,000 men are employed.

Steeltown Operating in Full.

For the first time in two years every stack at the works of the Pennsylvania Steel Company is in operation and all the departments are busy. Night shifts have been put on at a number of departments. No. 4 furnace produced its first iron in a year on September 3. Vice President J. V. W. Reynders returned from Europe during the week. He seemed well pleased with the conditions at the plant and said the work in Europe is not near as plentiful as it is in this country. Mr. Reynders gave out the following statement: "I have been too much out of touch with things to express an opinion as to future prospects, but orders on hand indicate a very grati-

fying improvement, and no doubt prices, which are still very low, will show a material advance within the next six or eight months. General conditions in America are very much in advance of those in Europe, where the depression, especially in the steel business, is still very acute."

TURBINE REDUCTION GEAR.

Westinghouse Invention Which, It Is Believed, Will Revolutionize Ship-building.

Announcement was made by the Westinghouse Machine Company during the week just ended of the perfection of a new reduction gear for marine turbines which, George Westinghouse predicts, will revolutionize the principles of steamship and even battleship building.

The new device, which has been brought to a perfection that makes it practically ready for commercial exploitation, after a long series of experiments in the East Pittsburgh shops, is the joint invention of Mr. Westinghouse, Rear Admiral G. W. Melville, U. S. N., retired, and J. H. MacAlpine, formerly of the navy. It is claimed for the new reduction gear that with it a comparatively small turbine will be able to do the work of the immense marine turbines of to-day, at a great saving in weight. The assertion is made by the naval experts who have investigated the new plan that the invention will enable battleships to carry 14-inch guns instead of 12-inch, because of the large saving in engine room weight.

The Westinghouse interests say they are not at liberty to give detailed information on the invention, because of some details yet to be completed; but attention is called to the fact that up to the present the great weight of steam turbines has proven a great drawback, since immense machines have been necessary to get the required speed revolutions, which sometimes reach 12,000.

Turbines for Dreadnaughts.

The board of construction of the Navy Department has decided that one of the two new 26,000-ton battleships, bids for which were opened a fortnight ago, should be equipped with Parsons turbine engines. As to the other, that question is yet to be determined. The naval board on construction recently recommended that both ships be equipped with turbine machinery. It appears, however, that there was a difference among the members of the board, some of them apparently favoring a combination of turbine and reciprocating engines for one of the ships, on the ground that the reciprocating engine is more economical at low speed. In view of this difference of

opinion the final decision as to whether turbines or reciprocating engines shall be installed on the vessel has been postponed. It will be settled within a week or two.

General Electric in Japan.

The General Electric Company has almost completed arrangements by which a new company will be incorporated in Japan for the manufacture of electrical goods. The new corporation will be owned jointly by the General Electric Company and the leading Japanese electrical goods manufacturer.

The Japanese concern to be absorbed is the great Shibaura Engineering works, the greatest concern of its kind in the Orient. The main works are located at Yokohama. It is said the General Electric Company has been conducting a selling business in Japan for 15 years. Besides transacting business under its own name, the American corporation owns 51 per cent of the stock of the Tokyo Danki Company and controls the directorate. The most powerful competitor of the American company is the Shibaura Engineering Works.

Flying-Machine Industry Thriving.

The daily press of New York quotes officers of the Patternmakers' Association of that city with the statement that the flying machine industry is helping to keep the patternmakers busy. Many firms have set to work experimenting on parts of aeroplanes and other flying machines, in the belief that there will soon be a great deal of money in the work. Their operations, it was said, were being conducted secretly.

"The patternmakers are all working," said an officer of the union, "because the trade is picking up, and this is greatly helped by the experimenting of many firms in the making of parts of flying machines in many shops in New York and vicinity. They want to be early in the field when flying machines are in popular demand, and believe there will be fortunes in the business.

"The motors, propellers and other parts have to be both light and strong, and the patternmakers come first in the making of new machinery, as they prepare the models in wood. Independently of this, the trade generally is good, and there are no competent patternmakers idle when they know where to go for work, as the work is here."

Litigation Over Wireless Plant.

The New Jersey courts on September 14 granted an order by which the International Telegraph Construction Company, a New York corporation, with a plant for the manufacture of wireless telegraph equipment in No. 71 York

street, Jersey City, must show cause why it should not be put in the hands of a receiver. The assets are said to be machinery and apparatus valued at \$30,000. The officers of the International company, the complainants allege, acted for the majority stockholders in executing a chattel mortgage on all its property in favor of a Delaware corporation, so that they might "fraudulently hinder" the National Electric Signaling Company, which then was suing the International because of alleged violation of patent rights.

To Develop Umbrella Patent.

A group of workmen at Steelton, Pa., have incorporated the "Pennsylvania Patent Umbrella Company," with a capitalization of \$30,000, to develop an umbrella invented by an Austrian mechanic. The umbrella when not in use can be folded so that it can be carried in a man's hip pocket. When folded it will be sixteen inches long and no thicker than one of the ordinary kind. The device is being made by a St. Louis firm till the factory at Steelton can be built.

IRON IN THE SOUTHWEST.

Speculation Over Schwab's Texas Projects—Oklahoma Developments.

Commenting on the recent rumors of the acquirement of Texas ore fields by Charles M. Schwab, and the speculation over possible plans for steel making development in the southwest, the "Manufacturers Record," of Baltimore says:

Charles M. Schwab is too busy a man to have spent a week looking over Texas iron-ore fields without previously having had rather satisfactory reports from engineers or experts. It is hardly supposable that Mr. Schwab would have started off on such a trip for the purpose of making an investigation of this kind unless his experts had pretty well impressed upon him that there are great possibilities in the ownership or development of Texas ores. No authentic information is yet available as to what will be the outcome of Mr. Schwab's investigation of Texas ores, but it is barely possible that some large investments may be made there, and possibly some important iron-making developments take place.

Meantime Texas papers are booming the iron and steel industries of the State. The Houston "Post" notes the fact that the steel for two of the largest buildings in Texas are now being fabricated in Houston. "The raw material," says the "Post," "are being shipped from Bethlehem and Johnstown, Pa., and consigned to the Houston Structural Steel Company, where the rolled plates, girders and beams are fabricated and shipped to the building in Dallas. This work is being done in Houston on account of the lesser cost for shipping the materials

to Houston, the water rates being a considerable item. It is said that the Houston firm can receive and finish raw iron and steel materials for the entire Southwest, taking the local rate into consideration upon reconsignment, at a lower cost than any other firm in Texas."

The "Post" asserts that "the iron and steel trade is gaining in Texas, and with the locating of more iron and steel manufacturing in Houston the industry will become one of the most important of the city's assets."

New Plant in Oklahoma.

The announcement is made at Sapulpa, Okla., of the organization of the Sapulpa Steel Works, with a capital stock of \$500,000, by S. R. Wells and associates, formerly of Indianapolis, Ind. The company will build a plant for manufacturing 100 tons of merchant bar iron daily, utilizing scrap iron as its raw material. From 500 to 800 workmen will be employed, and the fuel used will be natural gas. It is stated that the gas will be furnished at the lowest prices found in any State, the site of the plant being within one mile of the famous Glenn Pool oil field.

Other Plants in Southeast.

It is announced that, preparatory to building a plant at Houston, Tex., or Oklahoma City, the Safety Investment Company will, about January, 1910, open proposals for equipment, including lathes, brass-working press and automatic stamp-working machinery; cost of machinery \$125,000. They will manufacture automatic gas and gasoline burners and stoves, also heaters and ranges. George C. Mourer, of Salem, Ore., is the architect.

At New Orleans, a company is being formed to manufacture a patent smoke-consuming furnace, invented by Patrick J. Flanagan.

Furnace Property for Sale.

Announcement is made that the property of the Southern Car Wheel Iron Company, of Tallapoosa, Ga., will be offered at public sale on October 1. This property includes a 40-ton charcoal iron furnace, an ore-washing plant, 12 brick charcoal kilns of 60 cords' capacity each, timber leases and mining privileges. For particulars address A. V. Howe, trustee, Tallapoosa.

Battleship Contracts Let.

The contracts for constructing the new battleships of 26,000 tons each, to be known as the Wyoming and the Arkansas, were awarded September 14 to the William Cramp & Sons Ship & Engine Building Company and the New York Shipbuilding Company.

LONGEST CONCRETE VIADUCT.

Harrisburg Claims the Distinction, With Bridge Opened Last Week.

The new Mulberry street bridge at Harrisburg, Pa., which was opened this month with a public celebration, is claimed to be the longest reinforced concrete highway viaduct in the world. The cost of the structure was \$265,000; it contains 26,600 cubic yards of stone and cement, reinforced with 600 tons of steel.

According to Consulting Engineer James H. Fuertes, of the Harrisburg Board of Public works, the bridge is with one exception, the largest arched highway bridge in the world—the exception being the Point d'Esprit, across the Rhone, near Lyons, began in 1265 A. D. and finished 44 years later. The Mulberry street viaduct is 300 feet longer than the new reinforced concrete bridge under construction at Milwaukee, Wis.; it is 1,208 feet longer than the new \$1,600,000 stone arched bridge recently dedicated at Hartford, Conn.; it is 1,059 feet longer than the celebrated Connecticut avenue concrete bridge recently completed at Washington, D. C., at a cost of \$900,000. It is just twice as long and exactly the same width as the beautiful Westminster bridge across the Thames in London, which cost \$2,000,000.

The new viaduct, which replaces an old steel bridge injured by fire several years ago, consists of a series of 24 reinforced concrete arches of various spans, ranging from 33 to 97 feet in length, carried on concrete piers.

The total length of the bridge and approaches is 2,432 feet. The Cameron street approach is 604 feet long. Engineers conversant with the development of the use of concrete in bridges say that it is the longest highway bridge, considering its height, in the United States. The width of the bridge is 46 feet 6 inches over all. There are two sidewalks of 8 feet each, and the central roadway, paved with asphalt, is 28 feet wide.

Four abutments and 21 piers support the bridge. McCormick & Company, of Philadelphia were the contractors.

New Concrete Contracts.

At Harrisburg, the County Commissioners awarded the Ferro-Concrete Company, of Harrisburg, the contract to erect a concrete bridge over Spring creek in Derry township near Kettering's Mills. The contract price is \$2,145. The bids, for a steel or iron structure, with concrete floor, were: York Bridge Company, York, \$2,545; A. Buchanan, of Chambersburg, \$2,679; Climax Road Machine Company, of Marathon, N. Y., \$2,-

447.50; Nelson, Merydith Company, of Chambersburg, \$2,844.

BIG CEMENT CONTRACT.

Forge Steel Wheel Buildings Call for 30,000 Barrels.

The contract for the cement work on the new steel plant to be built at Butler by the Standard Steel Car Company, in connection with the forged steel wheel buildings there, was let during the week just ended.

H. J. Klinger & Company, of Butler, were awarded the contract, which calls for 30,000 barrels of New Castle Portland cement.

Ohio-Kansas Cement Receivership.

Involuntary bankruptcy proceedings were filed at Ft. Scott, Kan., September 14, by the bondholders of the Chanute Cement & Clay Products Company, operators of a large plant at Ft. Scott, with branches at Bronson, Mich., and Akron, O. The petition places the assets of the company at a quarter of a million dollars and the liabilities at two millions. The petition alleges irregularity in the execution and filing of mortgage bonds, as a means of preferring certain creditors. J. F. Townsend, of Akron, is secretary of the company. C. B. White, of Fort Scott, was appointed receiver of the plants at Chanute and Bronson by the referee.

Chicago's Cement Show.

The demand for spaces at the Third Annual Cement Show in the Coliseum, Chicago, February 18-26, 1910 is very brisk according to reports from the offices of the Cement Products Exhibition Company, 115 Adams street, Chicago. The National Association of Cement Users, the American Society of Engineering Contractors and the Illinois Association of Municipal Contractors, will all hold their conventions in Chicago during the show. It is expected that the annual meeting of the National Builders' Supply Association will also be held there.

To Build Town and Railroad.

News reports from Paintville, Ky., say the Consolidation Coal Company, which during 18 months has secured 35,000 acres of coal land, has started the expenditure of \$2,000,000 in development and accessory work. State Senator M. G. Watson, of Louisa, Ky., has secured a contract for building 10 miles of railroad spur to the Chesapeake & Ohio, and a bridge across the Big Sandy river. Four hundred houses are to be built at the new town of Van Lear, named for Van Lear Black, the Baltimore banker. The new town will be one mile from

Millers Creek Junction and four miles from Paintsville. A large power plant will supply the mines and the town. The mines will be operated electrically.

Tidewater Plant at Chester Sold.

H. H. Houston, receiver for the Tidewater Steel Company, Chester, Pa., sold the plant, at Chester, on September 14 to D. M. Coffin, of New York, who represents a syndicate of capitalists who, he says, will operate it. Coffin secured the plant for \$305,100, which is \$5,800 above the appraisement price. The bidding was spirited. The Tidewater plant is at Thurlow Station, just out of Chester. It was built in 1874-5. There are 7 gas heating furnaces, two soaking pits, and three trains of rolls, with an annual capacity of 120,000 tons of blooms, billets and slabs or 70,000 tons of plates. The open hearth steel development was added in 1881-2, with five basic furnaces, three of 50 and two of 60 gross ton, and an annual capacity of 125,000 tons of ingots.

The Tidewater plant went into receiver's hands two years ago. The capital stock consisted originally of \$1,500,000 common and \$600,000 preferred stock, par \$10. Since then the furnace has been operated under lease.

Toledo Steel Casting Extensions.

The Toledo Steel Casting Company, Toledo, Ohio, has succeeded the C. E. Sutton Company, Toledo, manufacturer of punches, shears, forging machines and steel castings. The officers of the company will be: S. D. Carr, president; Thomas F. Meek, vice president and general manager, and A. A. Barber, secretary and treasurer. Mr. Meek was formerly manager of sales of the Detroit Steel Casting Company, Detroit, Mich. The company contemplates improvements in the present plant, including the substitution of electric power for the present shafting and the installation of one 20-ton, one 10-ton and two 5-ton cranes. A new building is also being planned, to be 69 feet wide, 101 feet long and 26 feet high under the trusses, with a 50-foot lean-to along one entire side. A second three-ton converter and another 52-inch cupola are also to be installed shortly, which will bring the capacity of the plant up to 800 tons a month. The company expects to manufacture steel castings, for both railway and industrial work, in sizes up to 20,000 pounds.

Spin Yarn in Old Locomotive Shop.

A queer wrinkle in the conversion of old factory buildings to new uses is seen at Taunton, Mass., in the occupancy by the New England Cotton Yarn Company of a series of old shop buildings originally built and occupied by the

Taunton Locomotive Manufacturing Company. The buildings originally were used for locomotive buildings, and later housed the locomotive company's machine shops. Yarn is now the output of the plant.

STEEL BARGE BUILDING.

Mississippi a Likely field.

It seems likely the Mississippi is again to come to the front with additional demands for steel barges within the next year. Though little has been written about the trade, it is a fact that the American Bridge Company and various independents have greatly enlarged their facilities for the building of light draught barges recently.

Press reports from St. Louis quote W. K. Kavanaugh, president of the Lakes to Gulf Deep Waterway Association, who is interested in the organization of the \$10,000,000 company to operate freight boats down the Mississippi from St. Louis, with the announcement that the promoters had secured signatures of 76 prominent Mississippi Valley men indorsing the project; that he believes the necessary \$10,000,000 will be raised at the proper time and he will call a meeting in St. Louis early this month of those who had agreed to finance the proposition and effect the organization. He says that railways not having a New Orleans outlet are lending their assistance.

Some time ago the announcement was made that the American Steel & Wire Company had given the contract to the American Bridge Company for 10 more steel barges for its Pittsburgh harbor fleet, which will give the steel and wire company a fleet of 30 barges in all. The American Bridge Company also is just completing an order for three large bulk oil barges for a Mississippi oil transportation company. The first steel bulk oil barges to be used in inland transportation.

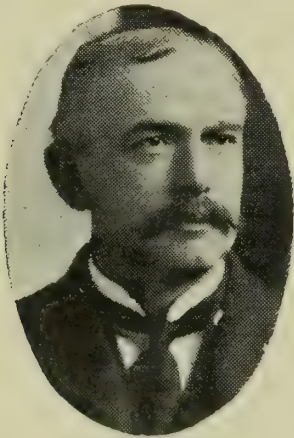
New Coal Transfer Barges.

News reports from Wellston, O., state that the Letroit, Toledo & Ironton Railway is having four steel barges constructed, and in this manner expects to get much West Virginia coal at Huntington, transporting it in barges to Ironton, where it will be reloaded for the lake trade. This plan has been evolved instead of constructing a bridge at Huntington. The different coal companies of the Guyan Valley are interested in having a lake outlet for their products. The barges are said to be under construction at Jeffersonville, Ind., and are to be delivered within two months.

Try a Want or For Sale ad in the Industrial World.

PERSONALS.

Azor R. Hunt, general superintendent of the Homestead works of the Carnegie Steel Company, and one of the most efficient operating officials of that concern, was last week elected a member of the board of directors of the company, to succeed the late William H. Singer.



AZOR R. HUNT.

The election took place at a meeting of the board held in the general offices of the company in the Carnegie building, Pittsburgh, September 13. More than ordinary significance is attached to this action, it being the custom of this company to elect to its directorate the operating officials of the larger plants as vacancies occur and in nearly every case, those chosen from the Homestead works are placed in line thereby to the office of vice president.

Mr. Hunt is a native of Ohio, and was first employed in a small position with the Carnegie Steel Company in 1887. He climbed the ladder through all of the mill positions, at one time being a roller and then foreman and mill superintendent. He is a practical machinist and mechanical engineer.

Alfred Bonzon, managing director of the Credit Lyonnaise, Paris, was the guest of A. C. Dinkey, president of the Carnegie Steel Company, in Pittsburgh over September 14 and 15. Mr. Bonzon arrived in the city September 14, accompanied by W. B. Perley of the banking house of J. P. Morgan & Company, of New York, and his son, A. Bonzon, of Paris. Accompanied by President Dinkey and other Carnegie Company officials they visited the plants at Homestead and elsewhere along the river. Mr. Bonzon would not discuss the reasons for his visit, but Carnegie Steel Company officials denied that it had anything to do with the contemplated listing of United States Steel Shares on the Paris Bourse.

A. F. Baumgarten, of Pittsburgh, has

accepted a position as manager of the iron and steel scrap department to be established by the George M. Newhall Engineering Company, Philadelphia. The company is an old one, but has not hitherto dealt in scrap. Mr. Baumgarten has had long experience in Pittsburgh, and has also been interested in the establishment of a number of re-rolling and other mills.

It was announced last week that H. E. Miles, chairman of the tariff committee of the National Association of Manufacturers has resigned. Mr. Miles, who is a manufacturer of agricultural implements in Racine, Wis., has taken an important part as a member of the association in promoting the creation of a permanent tariff commission.

Robert Geddis, assistant general manager of sales for the Jones & Laughlin Steel Company, in charge of the hot rolled department, left during the week for a three or four weeks' trip, visiting the trade along the Pacific coast. He will incidentally spend two or three days at the Seattle exposition.

Edward P. Dickinson, for 14 years with the sales department of the Jones & Laughlin Steel Company, has become vice president of the William Galloway Company, Waterloo, Ia. He will have charge of the manufacture of agricultural implements and gasoline engines for that company.

R. Hobson, president of the Hamilton Steel & Iron Company, presided at the opening sessions of the Canadian Manufacturers' Association, which held its annual convention at Hamilton, Ont., opening September 14.

Charles M. Schwab will speak before the Philadelphia Traffic Club at its October meeting. William A. Sproul, general freight agent of the Cambria Steel Company, is president of this organization, which has about 250 members.

Edward Pearson, general labor foreman for the United Iron & Steel Company's Fanny Furnace at Sharon, Pa., has resigned his position to accept the general superintendency of the Clairton furnace.

Judge E. H. Gary, chairman of the United States Steel Corporation, who has been abroad for the last two months or more, sailed for the United States on September 16.

John A. Topping, chairman of the Republic Iron & Steel Company, is in Canada on a hunting trip.

H. S. Budd, formerly Pittsburgh repre-

sentative of the D'Olier Engineering Company, has resigned to accept a position with the Allis-Chalmers Company.

B. F. Jones, president of the Jones & Laughlin Steel Company, has sailed for Europe.

REVIEW OF CATALOGS.

"A Study of the Open Hearth," in Morocco binding, has been issued by the Harbison-Walker Refractories Company, Pittsburgh, in which the manufacture of refractory material for the construction of furnaces, for the production of steel, by the various processes in use, is thoroughly discussed. Steel is defined and in its manufacture by the crucible, converter or open hearth method described. The construction of the various furnaces is explained and the analyses given of the material used. The closing chapter is devoted to the special processes in the production of steel, including descriptions of the Talbot, Monell, Bertrand-Thiel and the duplex systems.

W. B. Scaife & Sons Company, Pittsburgh, have issued in pamphlet form a paper on "Scaling and Corroding Substances and their Elimination from Water for Boilers," by J. C. Wm. Greth, C. E., read before the Scranton, Pa., Engineers' Club. The writer describes the development in efficiency and construction of boilers and the corresponding increase of impurity in feed water. Corrosion is thoroughly discussed and dangers arising from it presented, its elimination is explained and instructions given is explained and instructions given in steam power production.

Supplement No. 15, to the General Book of Views of Modern Blast Furnaces, built by the William B. Pollock Company, Youngstown, Ohio, has been issued by the company. The supplement contains full-page illustrations of the furnace and new hot blast stoves recently completed for the Brier Hill Iron & Coal Company, Youngstown, Ohio. Several views of the steel plate construction are presented.

The Keuffel & Esser Company, New York, manufacturers of blueprint paper and cloth, has issued a circular describing its line of printing materials, drawings materials, mathematical and surveying instruments and measuring tapes. The company has also published a book giving full directions on "Photo-Printing from Tracings," which will be mailed on application.

Ottumwa, Iowa. — Losses September 2 include Visser Shoe Brush Works, \$10,000; insurance, \$6,000.

Gas Engines to Boost Gas Pressure

AN important installation of Westinghouse gas engines for boosting the pressure in its illuminating-gas pipe lines, has been contracted for by the Public Service Corporation of New Jersey. At its Hoboken and Passaic plants, four Westinghouse vertical, 13-inch by 12-inch, gas engines, equipped with special regulating mechanism, will be employed to drive direct-connected Root blowers delivering gas at pressures varying from three-fourths pound to four pounds per square inch, as desired.

The delivery of gas by the blowers is automatically made to conform to the demand on the gas lines, by increasing the speed of the engines as the pressure in the mains tends to fall. To accomplish this, a special controlling valve has been added to the engine equipment, which throttles the fuel admitted to the engine, adjusting its speed between 290 and 124 revolutions per minute, as the demand for gas varies. The controlling valve is operated by a piston, to which pressure from the gas-reservoir line is admitted, and which moves against the compression of a helical spring to close the fuel valve as the line pressure rises. The controlling valve is fitted with a positive stop so adjusted that, even though the line pressure reaches its full value, the fuel valve can not close beyond a point where the engine will continue to turn over on light load, thus avoiding the necessity of restarting the engine when the blower pressure is again required. While it is estimated that the minimum demand on the pipe lines will probably absorb the delivery of the blower at its lowest speed, (125 revolutions per minute), any possible abnormal rise in pressure is prevented by the provision of relief valves which automatically open a by-pass around the blower, enabling the engine to run light while performing no other work than circulating the gas in its local circuit. A standard governor device has also been supplied with these engines, designed with considerable play or backlash, so that the governor does not control the gas admission until the engine speed exceeds 250 revolutions per minute. Above this, the governor travel takes up the backlash, throttling the gas and preventing any possibility of over-speeding in case the pressure in the transmission line should suddenly be relieved.

The location of the boosting equipment dictated the use of a magnet generator for ignition current, driven from the main engines. The feature of obtaining approximately constant speed for

the ignition-current generator run from an engine of widely varying speed, is unique. A Holtzer-Cabot WS magnet equipped with a governor pulley, is employed. The magneto, designed to run at 2,000 to 2,500 revolutions per minute, is driven by friction contact with the side face of the fly wheel rim, which varies in speed from 125 to 290 revolutions per minute, the governor acting to withdraw the pulley momentarily when its speed exceeds normal rating, so that whatever the speed of the engine, the magneto runs at approximately constant speed.

The engines are each of 90-brake horsepower capacity, and use illuminating gas from the supply lines, with a heat value of approximately 600 B. t. u. per cubic foot. The engines are direct-connected to the blowers through rope flexible couplings.

A Westinghouse single-phase alternating-current motor drives a 3-inch by 4-inch, belted air compressor supplying storage tanks from which air is taken to start the engines.

The value of this application of gas engines for boosting the pressure in gas transmission pipes is now quite fully realized, and boosting plants are being more extensively used. The high-pressure transmission of gas secures advantages analogous to the use of high potentials in electric power lines, availing the use of smaller pipes and increased transmission capacities.

With a gas "booster," as previously described, existing distribution systems severely overtaxed for capacity can in this way be made to adequately meet a large increase in gas consumption without further expense in piping.

IRON AND STEEL EXPORT IN A CENTURY.

The United States bureau of statistics has just completed its record of the commerce of the fiscal year, 1909, and combining it with the accumulated records of foreign commerce from 1789 down to date, finds that the total exports of domestic merchandise of all kinds during the 120 years have aggregated \$46,000,000,000, of which \$12,000,000,000, or 26 per cent were manufactures.

The total value of manufactures exported in 1790, \$1,243,547, forms 6 per cent of the total domestic merchandise exported. Pig iron amounted to \$108,000. Iron and steel products of all kinds recorded in the exports of 1790 amounted to but \$117,000 in value, and it was not until 1840 that the value of iron and steel manufactures exported crossed the million-dollar line. By 1850 they reached

about two millions; 1860, nearly six millions; 1870, 13½ millions; 1880, 14¾ millions; 1890, 25½ millions; 1900, 122 millions, and 1908, 184 millions, to which may properly be added about nine million dollars' worth sent to Alaska, Porto Rico, and Hawaii, and not included in the statement of our foreign commerce, making the grand total for 1908 nearly 200 million dollars.

Of the 368 million dollars' worth of manufactures sent to Europe in 1908, 97 million dollars was copper, 55 millions mineral oil, 47 million manufactures of iron and steel, 39 millions manufactures of wood, 17 millions naval stores, and 14 millions agricultural implements.

PIG IRON BOUNTIES IN AUSTRALIA.

Consul John F. Jewell, of Melbourne, transmits printed copies of the act for the encouragement of manufactures in the Commonwealth of Australia and the regulations governing the payment of the bounties, according to which the following bounties are to be paid, until June 30, 1914, for class 1, and June 30, 1902, for class 2:

Class 1—Pig iron from Australian ore, and puddled bar and steel made from Australian pig iron, \$2.92 per ton.

Class 2—Galvanized sheet or plate iron or steel (whether corrugated or not) made from Australian ore; wire netting, not being prison made and being made from Australian ore or from wire manufactured in the United Kingdom; wire made from Australian ore; iron and steel tubes or pipes (except riveted or cast) not more than six inches internal diameter, made from Australian pig iron or steel, 10 per cent on value.

The total amount which may be authorized for class 1 is \$730,000; for class 2, \$150,000.

To obtain the foregoing bounties, the rates of wages paid by any person must not be below the standard rates prescribed by any commonwealth or state industrial authority.

Russia's Lower Rates on Steel Rails.

Concerning the recent announcement of the order given by the Transvaal government to a Russian firm for 5,000 tons of 80-pound steel rails, Consul-General Julius G. Lay, of Cape Town, writes that British, American, and Canadian manufacturers had full knowledge of the opportunity, but could not compete. The freight rate was \$2.92 from Russia, against \$4.06 from England to Delagoa Bay. The saving effected, by purchasing from Russia amounted to about \$100,000, which involved a lower price also for the rails, owing, as stated by the treasurer of the Transvaal, to the combination of steelrail manufacturers in Europe, excepting Russia, and also to the combination rate of the steamship companies.

SPANISH IRON ORES.

Growing Importance of Almeria Mines.

Consular Agent A. E. Carleton, of the port of Almeria, furnishes the Bureau of Manufactures, at Washington, the following information concerning the red hematite ore of the Spanish Province of Almeria:

The iron-ore resources of Almeria have always been known in the commercial world, but not until the failure and lessening of production of the mines in the north of Spain has any special attention been paid to the development of this region. Although its mineral possibilities are not yet fully appreciated, there appears to be a general opinion among mining experts, based on extensive surveys and present workings, that red hematite ore is to be found in abundance and of excellent quality, and a great future is predicted for the industry.

The great drawback to the development of the mineral resources of Almeria is the lack of railways; the only line in the Province, which passes through only one district, not being able to give transport to all the minerals extracted. There is a network of cables connecting the mines with the foregoing railway, and likewise narrow-gauge roads belonging to private companies. There are also several cables which run direct to the sea.

While the immediate outlook for any extensive developments of this industry are not as bright as they should be, much interest is being displayed by foreign capitalists in the purchase of large mining properties and the best-known concessions, and it is only a question of time when these mines will be worked to their fullest extent.

The Province of Almeria ranks fourth in the production of iron ore in Spain, the following statement showing the relative output in the several districts for 1907 in metric tons: Bilbao, 4,736,190; Santander, 1,437,707; Murcia, 1,033,022; Almeria, 844,676.

EASTERN MACHINERY NOTES.

Extensive orders are being placed for equipment for the new plant of the Fiat Automobile Company at Poughkeepsie, N. Y., on which work will begin shortly.

The Atlantic City Electric Company is planning a new power plant that will cost about \$150,000.

The Roebuck Weather Strip & Wire Screen Company, of Brooklyn, has been incorporated with a capital of \$100,000 to manufacture screens and weather strips. The incorporators are: C. F. Fairbanks, G. A. Warren and W. H. Dodd, the latter of this city.

The Pressed Steel Pulley Company, of

Worcester, Mass., which was recently incorporated with a capital of \$100,000, will occupy part of the new addition to the Worcester Pressed Steel Company, with which it is closely related.

The Standard Tube & Metal Company has been incorporated with a capital of \$50,000 in Newark, N. J. The company will manufacture metal tubes and novelties.

The Standard Gas & Electric Power Company has been incorporated by Philadelphia interests with a capital of \$600,000. The new company will be headed by S. S. Eveland, and will manufacture motor cars and railroad cars.

It is announced that the board of water supply of New York will receive bids on September 22, for two 12,500,000-gallon steam turbine pumps.

Owing to the large number of locomotive orders recently received by the Baldwin Locomotive Works, that company is an active buyer of machinery.

The American Electric Tool Company, of Petersburg, Va., has been incorporated with a capital of \$100,000.

BRITISH IRON AND STEEL INSTITUTE.

In accordance with previous announcements, arrangements have been made to hold the autumn meeting of the Iron and Steel Institute in London, on Monday, Tuesday, Wednesday, and Thursday, September 27, 28, 29, and 30, and Friday, October 1, 1909. The following papers have been offered for reading:

"On the Determination of the Power Consumption of Reversing Rolling-mills." By C. A. Ablett, London.

"On Comparative Tests of Cast Iron." By E. Adamson, Sheffield.

"On Artificial Magnetic Oxide of Iron." By F. J. R. Carulla, Derby.

"On Action of Air and Steam on Pure Iron." By J. Newton Friend, Ph. D., Darlington.

"On Corrosion of Iron." By J. Newton Friend, Ph. D., Darlington.

"On Uniform Moisture in Blast." By Greville Jones, Middlesbrough.

"On the Refining of Steel by Electricity." By Disponent E. J. Ljungberg, Falun, Sweden.

"On the Fuel Economy of Dry Blast, as Indicated by Calculations from Empirical Data." By R. S. Moore, London.

"On the 'Growth' of Cast Irons after Repeated Heatings." By Professor H. F. Rugan, Tulane University, New Orleans, U. S. A., and Dr. H. C. H. Carpenter, M. A., Manchester.

"On the Maintenance and Renewal of Permanent Way." By R. Price-Williams, London.

"On the Constitution of Carbon-tungsten steels." By T. Swinden, B. Met., Sheffield.

Visits will be made to the Portsmouth dockyard and his majesty's naval establishments, and to a number of great manufacturing plants in the vicinity of Staffordshire.

WOULD TAX ANTHRACITE COAL.

Hon. John O. Sheatz, treasurer for the Commonwealth of Pennsylvania, addressed the State Bankers' Association at Bedford last week on the topic of "Taxation," on which occasion he had this to say:

"The third natural resource is coal. I shall speak only of anthracite coal, because it is distinctly a Pennsylvania product, and the people of our State should not permit this to be depleted for the use and comfort of the nation without some permanent compensation, benefiting all the people of a State in which a divine Creator so generously placed beneath the surface of her soil this wonderful and valuable commodity.

"As two of our great natural resources (lumber and oil) are past producing a large revenue, we are justified in levying a tonnage tax upon this one great natural resource, which could produce a sum great enough to leave a permanent monument of enduring benefit to all in Pennsylvania. There is no doubt but that the very catchy phrase, 'Taxing the coal bucket,' would be used to some considerable extent, but as the average coal consumption per family of moderate means is but four tons a year, they should not disapprove of this additional charge when the return in value to them is various ways would be about four dollars to one expended.

"Of the 64,665,014 gross tons of anthracite coal sold during 1908, all but 19 million tons could bear a graded tax, the amount so placed as to produce about 10 million dollars annually. The domestic coal consumption of Pennsylvania would not pay more than one-fourth of this amount, while the various sections outside of our State would pay the remainder (three-fourths) of this tax; one-half of this amount should be used in highway construction to build substantial roads throughout Pennsylvania, thereby keeping pace with neighboring States; one-fourth should be used for the purchase and preservation of the forests, watersheds and waterpower, and the remaining one-fourth be added to the public school appropriations."

DEATHS.

WILLIAM MORAN.

At Seattle, Wash., William Moran, the ship builder, a member of the firm which built the battleship Nebraska, died September 14. He is the fourth of the eight Moran brothers to die within four years.

J. J. HAGERMAN.

J. J. Hagerman, builder of the Colorado Midland Railway and one of the foremost among Colorado pioneers, died at Milan, Italy, September 15. Mr. Hagerman was 70 years old.

THE GERMAN STEEL UNION.

The report of the German Steel Union for its last financial year (1908-9) is not of a very encouraging nature. A continued decline in sales from April, 1908, to March, 1909, is recorded, accounted for by the fact that last year must be classified among the years of industrial depression. At the end of the year covered by the report—that is, in March last—it was impossible to make any forecast as to future developments, but the demand was better than had been the case 12 months earlier. The report was drawn up in the beginning of August, when there was a slight improvement, especially as far as the foreign market was concerned.

The aggregate sale of unmanufactured steel during the year 1908-9 amounted to 4,801,998 tons, which is considerably sort of the aggregate allotments, the latter being 6,168,373 tons, so the deficiency amounted to 1,366,375 tons, or 22.15 per cent. The figures for the previous year (1907-8) were more favorable, inasmuch as the sales amounted to 5,426,998 tons, which was 669,095 tons short of the aggregate allotments of 6,096,093 tons, or 11 per cent.

The weakening of the market, which was evident during the second half of the year 1907, continued, with trifling exceptions, throughout the year, and exercised its unfavorable influence upon the whole of the year's business of the Steel union. Money certainly become more plentiful, but political disturbances at home and abroad proved an obstacle to the return of any real confidence in business. The general unfavorable conditions of affairs, more especially as far as half-finished goods were concerned, caused the union to reduce the quotation for this class by 5 marks last June. The repeated attempts to form a bar iron union proved abortive, owing to conflicting interests, and the somewhat exclusive position taken up by certain works. A slight improvement which manifested itself last autumn did not prove of lasting duration. The collapse of the Pig Iron Syndicate, and the fear of a war in the Balkans, caused depression to supersede the temporary better feeling, buyers acting most cautiously, to the especial detriment of the trade in shaped iron. The union regrets that the largest consumer in the iron market, on account of the protracted unfavorable financial position, and under the pressure of a tendency to economize, has been unable to improve the condition of insufficient employment at the iron works.

At the general meeting a statement was made to the effect that orders in hand were now 300,000 tons larger than had been the case 12 months earlier. The mining rails business had also improved

since June, the result being some notable contracts, both for home and abroad. In the matter of prices the Belgian competition was still making itself felt. Shaped iron remained about the same, but the orders in hand at the beginning of the month were 75,000 tons larger than on August 1, 1908, and the quantity dispatched during the first seven months of the year were 174,000 tons larger than for the corresponding period of the previous year. The more favorable reports about this branch from America would, it was said, have had more effect had not the British market been somewhat depressed, and the competition from that source still very marked.

Commenting on the report London "Engineering" says the increased production of pig iron causes some unrest on the German market, as the consumption cannot keep pace with the output, and thus the most important branch of the German iron industry is still laboring under unfavorable conditions. Hopes are expressed that the new American tariff for pig iron will facilitate export in that direction.

EDISON IMPROVES CEMENT MAKING METHODS.

Thomas A. Edison has discovered another improved method for the manufacture of cement, which, coming upon the eve of perfection of the poured concrete house which he expects to build for \$1,250 for persons in moderate circumstances, would seem to aid in paving the way toward the realization of the distinguished inventor's pet scheme. The latest accomplishment is the result of several years of study and the expenditure of a great deal of money in making experiments.

Soon after the Edison Portland Cement Company's mills were established in New Village, N. J., Mr. Edison stood one day watching some laborers drilling and blasting the face of a cliff. He saw the blast "shoot," dodged with the others to avoid the shower of debris, and then he watched the laborers redrill and blast several large boulders which were blown from the working breast. He glanced at his watch and was surprised to note how long he had been watching that operation. That set him to thinking. "Why not devise some means for crushing those big boulders and thus save labor, time, dynamite and money?" He asked himself.

This month at the New Village mill the result of that visit to the quarry is in operation and, having proved itself a success, has just been placed on the market. Heretofore, the use of a steam shovel at a quarry has been limited. By Mr. Edison's invention their use is aug-

mented. The contrivance is known as a "giant roll crusher," and bears its inventor's name. It consists of two large rolls six feet in diameter and seven feet in width. They weigh 110,000 pounds each, the complete machine containing 860,000 pounds of iron and steel. The rolls are built of such strength and massive proportions that no shock or strain, however great, can break or injure them.

These rolls have octagonal faced mandrels, on which are fastened corrugated plates, and the high speed of the rollers brings the bumps against the surfaces of the rock with such force that they are literally chewed to bits in a few seconds. Rock weighing from 12 to 14 tons, and from seven to eight feet in diameter, are devoured in an instant. A description of the operation of this giant device is interesting.

In front of the machine a freight car is backed up. On this conveyance is a huge steel scoop containing a boulder of cement rock that weighs about 14 tons. It is from a foot to two feet higher than a good sized man, and three men could hide behind it. An electric hoist picks up the scoop and holds it over the hopper. The giant rollers under the hopper are attached to a pulley riding on a steel shaft almost a foot thick by a huge belt. A terrific speed is developed and then, at the operator's word, the boulder is dropped into the receptacle.

Like a pebble in a child's hand, it is tossed about as the rollers strike its surface. It seems to be a thing of life, so lightly is the 14-ton rock tossed about. But the impression lasts only a minute, for in scarcely that time it disappears, and when the eye seeks it at the discharge it is transformed into thousands of small rocks, six inches or less in diameter and of such size as to permit of ready crushing in a smaller machine. Before another car can be backed up to the hopper and the scoop raised, the greedy steel maw is ready for the second boulder. With the use of several 100-ton steam-shovels the rolls will crush an average of 750 tons an hour, or 7,500 tons a day of 10 hours. This average has been demonstrated at the mills.

To cement manufacturers in particular and to companies operating quarries for road work or for the manufacture of concrete stone in general, the invention of Mr. Edison seems to have a special interest. Stone cannot arch in the course of transit from the crusher to the rolls. In this particular one of the most prolific sources of waste is removed.

Although the machine has been on the market only a short time, orders have been received and installations are being made to six quarry companies in New York, Michigan and Illinois.

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THE CONNELLSVILLE COKE TRADE.

QUESTIONS of coke prices for next year are beginning to interest consumers. The market has advanced until \$2.50 at ovens is generally spoken of as the prospective price of Connellsville furnace coke for 1910. When the Connellsville coke merger was being worked up, not so many months ago, coke was selling at less than \$1.50 and predictions were freely made that the merger could not be a success, because it would have to make a profit of nearly a dollar a ton. Here is the dollar, but where is the merger?

The demand for Connellsville coke has exceeded the labor supply, and there has been a scarcity. There is no doubt that more ovens would have been operated of late had men been obtainable. The region is still producing considerably less than its capacity on account of the labor scarcity.

To obtain light on what the Connellsville and lower Connellsville regions should produce a comparison may be made between the number of ovens in existence with the number in existence when the region last worked at practically full capacity. Taking the always useful reports of the Connellsville Courier, we find that the best week in each of the four quarters of 1907 showed the following:

Week ending	Total Ovens	Ovens in	Production
March 16	34,054	32,374	415,123
May 25	34,518	32,413	421,278
September 28	34,850	33,105	420,127
October 12	34,852	33,226	420,038

The number of idle ovens appears unnecessarily large, but assuming that the condition is necessary, we take the production in proportion to the number of ovens in existence and not the number in blast, which gives an average weekly production of 423,641 for an average of 34,555 ovens in blast. This would be 12.26 tons of coke weekly per oven in existence.

The factor applied to the 38,558 ovens reported as in existence at present would call for 472,720 tons output per week. The actual production this month has been running at between 420,000 and 425,000 tons, so that even with 1,800 ovens idle, the average number idle in the four weeks of 1907 taken for comparison, the Connellsville output could be 50,000 tons a week more than it is. That would take care of from one to two dozen additional blast furnaces, depending on size.

The prospect is that demand for coke will increase, as additional furnaces are being blown in, while furnaces already in blast expect to increase their output, and therefore to an extent their coke consumption, as weather more favorable for blast furnace operations arrives. On the other hand the labor supply is constantly increasing, and it cannot be doubt that before long it will be possible to operate as many ovens as are required. The coke trade would be in a sorry way if it could not count upon getting labor. It should be recalled, however, that coke wages have been reduced since 1907, while in the iron and steel industry proper, few permanent reductions have been made.

THE LAKE ORE MOVEMENT.

LAKE Superior ore interests expect the current season's ore shipments to break all previous records, the greatest season's tonnage hitherto having been 42,266,668 tons, in 1907. The trade has shown its alibity to move in excess of 7,000,000 tons in a month, August, although losing practically three days on account of the flood, showing a total of 7,193,199 tons. The July shipments were 6,693,025 tons. September, a 30-day month with one holiday, is expected to do 7,000,000 tons when August passed that mark although hampered by a flood, while October, it is held, ought to do 7,500,000 tons. As shipments to September 1 were 22,588,549 tons, such shipments would bring the total lake movement, to November 1, up to 37,088,549 tons, or only 5,178,119 tons short of the 1907 total. There are the all-rail shipments for the whole season, which may run over a million tons, and the ore brought down in November and early December. Together these tonnages are held likely to exceed 5,178,119

tons, which would, therefore, make the current season break the record of 1907.

The lake shipping season is roughly seven months long, and with 7,000,000 tons already moved down the lakes in one month, and the prospect that 7,500,000 tons can be done in a month, it should not be difficult to keep up an average of 7,000,000 tons a month for seven months, which would make 49,000,000 tons, and adding a millions tons for all-rail shipments, gives an even 50,000,000 tons. That quantity, the ore interests say, is likely to be shipped in 1910, if the demand for ore is in keeping with the present prospects.

A curious feature of the Lake Superior ore trade at present and last season is that it seems to move considerably more ore in proportion to pig iron production than formerly. Some explanations have been offered, that the ore is leaner than formerly, requiring a greater weight to make a ton of pig iron, that larger stocks have to be established at the lower end of the lake haul, and that the region tributary to Lake Superior ore is growing. These explanations have more or less cogency, but they do not seem entirely to explain the recent movement.

Unfortunately there are no statistics by which the production of pig iron from Lake Superior ores can be compared with the shipments of ore. The region tributary to Lake Superior is not clearly defined, and changes occur from season to season. In the east, for instances, some furnaces use Lake Superior ore in mixture with local and imported ores, while Colorado has sometimes taken a considerable tonnage of Lake Superior ore. The only comparison that can be made is between Lake Superior ore shipments and total pig iron production. In order to observe whether there is evidence of any progressive change in the proportion of Lake Superior and other ore mined, the following table has been compiled. It starts with the production of ore in the United States, as reported by the United States Geological Survey, and then gives the shipments of Lake Superior ore. The one is production, the other shipments, and the latter do not correspond exactly with production, but the difference is approximately the production of ore outside of the Lake Superior region.

	Total Production	Lake Superior Shipments	Difference.
1901	28,887,470	20,615,007	8,271,572
1902	35,554,135	27,585,904	7,968,231
1903	35,019,308	24,300,510	10,710,798
1904	27,644,330	21,849,401	5,794,929
1905	42,526,133	34,384,116	8,142,017
1906	47,749,728	38,565,762	9,183,966
1907	51,720,610	42,266,668	9,453,951
1908	35,983,336	26,014,987	9,968,349

Thus the outside production has grown, but not as rapidly as the Lake Superior

production. The variations from year to year in the balance are probably explainable on the ground of variation in mine stocks in the Lake Superior region. In 1903, for instance, the Lake Superior production was probably considerably more than the shipments, while in 1904 the reverse was probably the case.

The total shipments of Lake Superior ore in the six years 1901 to 1906, inclusive, amounted to 147,309,600 tons, while the total production of pig iron in the corresponding six years was 122,308,948 tons, the ratio being 1.2 tons of Lake Superior ore shipped to one ton of pig iron produced in the whole country.

It is well remembered that the slump in pig iron production began about November 1, 1907, just as the Lake Superior season was closing. As a result, the 1907 season shipments were practically on the basis of full operation of the furnaces during the winter and spring, while as a matter of fact production was greatly reduced. This naturally meant the creation of much larger stocks than were needed to carry the furnaces to the opening of the 1908 navigation season. Assuming that the pig iron producing season is six months later than the corresponding ore season, we may take the pig iron production from July 1, 1907, to June 30, 1908, as comparable with the Lake Superior shipments in the calendar year 1907. This production was 19,221,321 tons, and applying the 1.2 factor one would find 23,000,000 tons of lake ore called for, while 42,000,000 tons were shipped in 1907. The pig iron production July 1, 1908, to June 30, 1909, was 20,040,360 tons, and again applying the factor shows 24,000,000 tons of lake ore, while 26,000,000 tons were shipped. Here were two excesses, amounting to 21,000,000 tons. Again, the production in this half year is running at about 13,000,000 tons, while full operation in the first half of next year would be 15,000,000 tons, a total of 28,000,000 tons for the 12 months, which with the 1.2 factor would involve 34,000,000 tons of lake ore, but the season's prospect is 43,000,000 tons, an excess of 9,000,000 tons.

Thus, according to the average relations prevailing in 1901 to 1906, the 1907-8-9 seasons show a surplus of some 30,000,000 tons of Lake Superior ore shipped. The yearly average is 10,000,000 tons, which is more than the average ore produced in the country, outside the Lake Superior region. Some of the discrepancy may be explicable on the ground that the pig iron production from Lake Superior ore is growing more rapidly than is the production from other ores, but that cannot be the whole explanation since the figures would make Lake Superior ore absorb the whole country. The leaner character of Lake

Superior ores will account for a part of the difference, but the average iron content cannot have gone down more than between two and four units, which would amount to less than five per cent increase in ore tonnage, perhaps between one and two million tons. The increase in stocks at the lower end of the lake haul may account for something, but only a relatively small fraction of 30,000,000 tons.

On the whole, then, it may be said that if the Lake Superior region does ship 43,000,000 tons of ore this year, and ships 50,000,000 tons next year, it will be doing all that can possibly be required by the consuming demand. The country outside of Lake Superior can easily be depended upon for 10,000,000 tons of ore, and imports promise to be in excess of 2,000,000 tons, giving a grand total of 62,000,000 tons. Counting out the excess over 60,000,000 tons as applicable to open-hearth steel manufacture, the 60,000,000 tons should easily take care of 33,000,000 tons of pig iron. With the new furnaces being built our capacity will be 32,000,000 tons early next year, with the prospect that the end of the year will see an increase to 33,000,000 tons. Thus the increase in furnace capacity and the increase in ore shipments will strike a balance, but it does seem that a material portion of the ore shipments are anticipatory.

OUR RETROSPECT.

IN our issue of September 20, 1889, an even 20 years ago, the leading editorial takes the position that wages in the iron and steel industry in the United States are much higher than in foreign countries, while the quantity of labor, measured in days or hours, involved in the production of given material, is practically the same, and that therefore there is practically no opportunity for exports. It is held, however, that in finished forms American methods are far ahead of those of other countries, so that the quantity of labor is much smaller, and that therefore large exports in such lines can be expected. It is instanced: "We are selling no common steel abroad; we are selling some of the higher grades of tool steel. We are selling but little pig iron, and that chiefly charcoal, but we are selling axes and saws and locks and mowing machines and locomotives, articles into which the quantity of labor that has been put in this country is less than the quantity necessary to produce these same articles abroad."

The argument still holds good in a measure, as it is the fact that at the present time we are much more successful in exporting machinery, hardware,

etc., than in exporting the ordinary products of the iron and steel industry proper.

There is another argument used in that editorial which after the lapse of 20 years requires modification. It is said: "We can easily and cheaply raise an abundance of food, enough to supply our own people and still have a large surplus. It follows, therefore, that we are in a position to export food, but not to export iron and steel made by our high priced labor." Conditions have changed; our prospects for exporting food have greatly diminished, and the country should now face the problem of what to do as our surplus of food diminishes.

Reference is made in this issue of 20 years ago to a sale which had just occurred of an iron and steel plant in Cleveland to an English syndicate, and the offer on the part of British capitalists to buy a merchant furnace plant in Eastern Pennsylvania, and the editor expresses his conviction that such investments would not turn out well in the long run; that the substitution of a foreign management would reduce the enterprise and initiative necessary to keep pace, and cites the experience of English joint stock companies as compared with other English iron and steel enterprises under individual ownership. The editor makes not the slightest reference to the Carnegie interests, but the fact is that it was just at that time that important negotiations were on between Mr. Carnegie and a syndicate of English capitalists for the sale of the Carnegie properties. In October, 1889, the deal fell through. The editor probably knew something about these negotiations, although he discreetly omits any reference to them in the editorial, and his reflection on that point probably incited him to the condemnation of foreign ownership of an American iron and steel enterprise. At any rate, his judgment was very good; if that sale had been consummated there is not the least reason to believe the enterprise would have grown into the remarkably profitable undertaking which less than 12 years later was taken into the United States Steel Corporation at a cash valuation of about \$400,000,000.

Berlin's American Exposition, 1910.

An American Exposition is to be held in the Exposition Palace, in Berlin, in April, May and June, 1910. The exposition is intended to educate the German population, to the importance of American manufactured products. Particulars are obtainable from Max Vieweger, manager, Hudson Terminal buildings, 50 Church street, New York.

Market Conditions, Prices in Producing and Buying Centers

**Bessemer Iron Goes to \$17.50;
Steel Corporation Does Not Buy.**

PITTSBURGH—For two days, at the close of the week, the purchase of a tonnage of Bessemer pig iron variously estimated at 30,000 to 45,000, by the Steel Corporation in the open market, was imminent; but the week closed without the deal being closed. The negotiations between the Steel Corporation and the Valley interests were on the basis of \$17, Valleys, and on the report of the probable sale the market received sufficient impetus to go to \$17.50, Valleys, for this year's delivery—the highest price at which Bessemer has sold in Pittsburgh district since January, 1908.

Whether the Steel Corporation still will conclude the deal, with the market at the higher level was a question on which the trade would not venture an opinion. Considerable of the iron is under option, and could possibly be obtained at \$17 for a day or two—though the last of the \$17 Bessemer in the open market changed hands last Thursday.

The week in the iron market was in many respects one of the most remarkable since the opening of the summer. Early in the week some Bessemer for the first quarter of 1910 could have been obtained at \$17 or \$17.50; and it achieved its new eminence of \$17.50 for present deliveries without an actual sale of any proportions. Furnace interests all but refused to quote prices on Bessemer for 1910 late in the week. While no sales were reported, it was thought that in some instances \$18 could be done, though many sellers declared that no substantial tonnage could be obtained for the first half under \$18.50. The rise was in the face of very pronounced adverse sentiment by some furnace interests, who confessed to a fear that the rise in all grades of iron during the past 60 days had been too heavy to be sustained during the remainder of the Autumn. On the other hand, it is pointed out that a large part of the capacity of the Valley furnaces already is taken up until past the first of the year, and that stocks are lower than at any time for a year.

It can be said that if the Steel Corporation buys now, it will be because the combine mills actually need pig metal, and not because of any desire to influence the iron market. It was intimated early in the week that the rumored inquiry of the Steel Corporation had been made for the effect it might have in sending Bessemer up another point in price. In reply to this,

it is pointed out that the Steel Corporation now has practically all its furnaces in blast—the Carnegie Steel Company within two weeks will have 58 out of its 59 stacks in operation, with one remaining stack, in the Carrie group, out for relining. Notwithstanding this unprecedented production of pig iron by the Carnegie Company and the entire Steel Corporation, its mills, in a number of cases, are said to be running from hand to mouth in the matter of pig iron supply. One reason why the Edgar Thomson rail mill at Braddock is being run at only about 65 per cent capacity is because the production of part of the Braddock stacks is necessary to keep up the tremendous tonnages at Homestead, across the river. It is argued that, if the large rail demand now foreshadowed by the railroads should materialize suddenly between now and the holidays, the Braddock plant would be unable to run in full without robbing Homestead of its present pig supply. In other words, the Carnegie Steel Company's furnace capacity in the Monongahela valley is not proving sufficient to operate all its mills in that district during the present rush. The Steel Corporation did not pile up reserve supplies of Bessemer iron during the depression, as did some of the independent interests, and with the present excessive tonnages from its mills it will be remarkable indeed if its furnaces do not fall short of filling the demand on them before the close of the present month.

Early in the week, the Jones & Laughlin Steel Company bought 20,000 tons of Bessemer at \$17, Valleys—this purchase, with 10,000 tons bought at \$16 and \$16.50 and 20,000 tons at \$16.75, making a total of 50,000 tons the Jones & Laughlin interests have taken in Pittsburgh district within less than 60 days. During the week W. P. Snyder & Company bought a total of 30,000 tons at various points, at prices that were equivalent to \$16.60 and \$17, Valleys, part of the product being from the Valley furnaces at a straight \$17 price. Of this, 20,000 tons is said to have been from the Josephine furnace of Corrigan, McKinney & Company, at Josephine, at \$16.75 at furnace, freight to Pittsburgh being 75 cents a ton, so that this tonnage was laid down in Pittsburgh at \$17.50 net, as against \$17.90 which Valley iron was costing at the same time. On Thursday a prominent furnace interest bought from a broker 2,500 tons more of Bessemer at the \$17 basis, and this is said to have cleaned up all the available Bessemer at this price. Several transactions of smaller tonnage were picked

up at \$17.50, and all furnace interests were holding firmly at that price.

Other grades were not backward in following the lead taken by Bessemer. The week saw the heaviest inquiries of two months in the foundry and basic iron markets. On several sales of 1,000 and 2,000-ton lots, foundry No. 2 went to \$16.25 and \$16.50 for this year's delivery, and furnaces refused to quote the No. 2 grade for 1910 delivery at less than \$17. Basic was very firm at \$16, with furnaces not anxious to quote a price for next year's delivery. One furnace quoted \$16.50 for a large tonnage, running from November through the first half of next year. The West Penn Steel Company took 3,000 tons of basic for next year's delivery, but on the basis of an exchange deal in part, for steel bars. It was estimated that thus far in the present month, 80,000 tons of Bessemer iron have changed hands, while the transactions in foundry and basic will amount to 60,000 tons or more.

The activity of the Jones & Laughlin interests in taking up the large tonnage of Bessemer since the first of September is explained in part by the fact that the company finds it will be unable to start the first of its new furnaces at Aliquippa before November 15. Originally it had been planned to have the first of these in blast by October 1. The second Aliquippa stack will not be ready before January 1. The company is making 70,000 tons of Bessemer per month at its five Eliza and one Soho furnace in Pittsburgh, but is using much more than that in its mills.

The story was current in iron brokerage circles during the week that the mysterious 40,000 tons of "high-grade iron" said to have been bought at Dusseldorf, Germany, for American import, was a purchase of spiegeleisen made by the Steel Corporation, in order to release the Lucy furnace, which has been turning out spiegel for some time, and which was needed on Bessemer. This report could not be confirmed in Steel Corporation circles, although a pretty thorough canvas was made by men in the trade.

During the week, the United States Cast Iron Pipe & Foundry Company, which has almost doubled its operating capacity in the past eight weeks, also went into the market for 18,000 tons of pipe-making iron for the remainder of the year and the first quarter of 1910. One large steel-making interest also made its appearance in the trade during the latter part of the week with an inquiry for 20,000 tons of Bessemer for first quarter delivery. A conservative

estimate of stocks in the yards of the Valley furnaces on Saturday placed the total at about 90,000 tons, but there were enough negotiations on that time to clean up this tonnage.

The only two Carnegie furnaces still out of blast are one Carrie, which is being re-lined, and the Steubenville and Zanesville stacks. These latter two, although small, isolated stacks, are being made ready to resume. The Edith furnace, of the American Steel & Iron Company, in Manchester, has been fired, as have both the Columbus stacks of the Carnegie Company, and the steel mill at Columbus is on full blast. The Mary furnace of the Ohio Iron & Steel Company, at Lowellville, was lighted up during the week after extended repairs. All the Mahoning Valley furnaces now are in operation except Struthers and Brier Hill, which are undergoing repairs.

During the week the Carnegie Steel Company sent out notices to the trade of another advance in structural materials and $\frac{3}{4}$ -inch plates are now on 1.50c base, and steel bars are 1.40c. This now represents the minimum. The Jones & Laughlin Steel Company and other independents who had not withdrawn their minimum quotations took simultaneous action with the leading interest in this advance. Bessemer billets still radiate at \$26 and \$26.50, Pittsburgh, though there is acute shortage in Chicago, and considerable talk of Eastern mills shipping their billets West. The Carnegie Steel Company will furnish 12,000 tons of plates for three new ore boats just ordered by the Pittsburgh Steamship Company, the Steel Corporation's subsidiary on the lakes. In the bar and sheet trades, mills are 90 days behind in deliveries.

Of the week's orders in steel rails, 20,000 tons went to the Carnegie Steel Company, 3,000 tons from the Pittsburgh & Shawmut, 10,000 scattering, and 7,000 for light rails. No standard sections for next year's delivery have yet been ordered from the Carnegie mills. The tin plate and sheet steel mills will show a September output 20 per cent in excess of that for August, but the American Sheet & Tin Plate Company has made no change in quotations for the present.

Though the larger structural lettings are about all in for the present season, considerable railroad work and some building operations are still pending. The Carnegie Steel Company booked 5,000 tons of structural material for delivery in Ontario this year. The American Bridge Company will fabricate 1,000 tons of steel for a new bridge for the Chicago & Western Indiana Railroad near Hammond, Ind. The McClintic-Marshall Construction Company secured a 450-ton bridge contract from the Franklin & Fairfield, and the Mas-

sillon, O., Bridge & Structural Company will fabricate 1,300 tons in several small contracts along the Pennsylvania Lines West. The McClintic-Marshall Construction Company has taken about 1,000 tons of extensions to buildings, ore and coke bins, for the contemplated new construction at the plant of the Youngstown Sheet & Tube Company. Several heavy contracts at lake points are pending.

Pipe lettings for the week were heavy. The United States Cast Iron Pipe & Foundry Company took 3,000 tons of large sized pipe in a New York city contract, and another of 200 tons for the city of Rochester. The Standard Cast Iron Pipe Company took a 3,000-ton contract at Philadelphia.

The market on ferromanganese continues to gain strength, and while prices for this year are not much higher than a fortnight ago, next year's deliveries are considerably higher. There is quite a spread between this year and next year, as \$42.50 Baltimore, can be done for prompt and through this year, while \$44.50, Baltimore, is the minimum even for the early part of next year, freight to Pittsburgh being \$1.95.

The market for old material showed symptoms of hysteria early in the week, only to quiet down before Saturday. Dealers shifted prices many times in six days. Actual sales, however, indicate some advance in almost all grades. Borings and turnings were held at \$11.50 and \$13.50, respectively, by a number of dealers, but buyers were timid at that price. Heavy melting scrap brought \$17 and higher, and No. 1 wrought was held at \$18 to \$18.25. Considerable tonnage was moved.

East Looks to Railroads For Winter Prosperity.

NEW YORK—More and more, as the building season draws to a close, it becomes evident that the iron and steel traders are making their preparations for a record-breaking winter's run in the mills, principally on the strength of the demands of the railroads. Rail orders for 1910 reported this week, for the first time, seem to confirm the promises of the trunk lines made earlier in the year. The Tennessee Company has taken orders for 85,000 tons, of which 20,000 is from the Harri-man lines, 25,000 from the 'Frisco System, 30,000 from the Louisville & Nashville and 10,000 from the Atlantic Coast Line. The Tennessee Company also has on its books 110,000 tons of rails for export for shipment during the winter. The Lackawanna Steel Company has booked 20,000 tons from the Northern Pacific, 2,000 tons from the Great Northern, 5,000 tons from the Lake Shore,

2,500 tons from the Wabash, 1,000 tons from the Chicago & Alton, 5,000 tons from the St. Paul and 5,000 tons from the Burlington, mostly for ferro-titanium rails. The New York Central is now preparing its rail lettings for next year.

In structural material, also, the railroads have taken the lead, with extensive track-raising and bridge work ahead and a number of substantial orders for piling along the lakes. Lettings for the week, mostly on small buildings in this district, approximate 30,000 tons, of which the American Bridge Company secured 12,000 tons. This is exclusive of railroad work, of which 20,000 tons additional was let. The Erie, Pennsylvania, B. & O. and a number of western lines participated in these lettings. The engineering departments of the railroads have never been so rushed with specifications for this work as now, and extra draughtsmen are in great demand.

Iron is still in demand in New England, though the immediate demands of that market seem to be supplied, mostly by Buffalo furnaces. There was a good business in Virginia foundry and basic grades reported during the week. Prices remained unchanged.

A considerable cast iron pipe tonnage was sold the latter part of the week in New York and Philadelphia, including 3,000 tons for the city of New York, which was let on Thursday, and went to the United States Cast Iron Pipe & Foundry Company. Pipe founders have been asking higher prices for a fortnight, and the increase seems to be justified. Demand for iron and steel bars is considerably stronger in the local market. Ordinary iron bars are quoted 1.55c, tidewater, and steel bars at 1.56c to 1.61c, tidewater.

Rush in Rail Market; Pushing Pig Iron Capacity.

CHICAGO—The academic discussion over the changing of rail specifications and getting special chrome and alloy rails has been lost sight of in the present rush to place orders for winter rolling in the Western rail mills. Sales of standard sections in the Chicago market by the Steel Corporation for the week were 60,000 tons, of which 35,000 were for open hearth and the balance for Bessemer—all for delivery during the winter months and into next year. The Chicago and Gary rail mills are declared to be filled for the remainder of the present year. Light rail sales are heavy.

Of standards, the Santa Fe ordered 12,000 tons, in addition to its previous order. All of this goes to the Illinois Steel Company. A part of the Missouri Pacific's 40,000-ton order for next year is understood to have been placed. The

Lake Shore has filed reservations for 5,000 tons. In addition to its order with the Illinois Steel, the Santa Fe has placed 28,000 tons of rails with the Colorado Fuel & Iron. The same company is about to close for 22,000 tons of tie plates and 12,000 tons of rail joints.

The billet mill at Gary has been speeded up to a surprisingly large production, but the figures are not yet available. The most important increase in capacity in the Chicago district, however, is the putting in blast, on the 16th, of the Iroquois Iron Company's Furnace B. The Blue Island Car & Equipment Company's new bar mill also is running regularly.

Definite statements were made during the week by Steel Corporation authorities of the decision to build another ore dock on the upper lakes, during the fall and winter, probably at Two Harbors or Duluth. This will require 10,000 tons of steel for the construction work. The 5,000-ton structural contract for the new Sherman House, at Chicago, was let during the week to the Moravia Construction Company. The Brown-Ketcham Iron works secured the 1,200-ton letting for the municipal court at St. Louis. Several large lettings of structural steel by the railroads still remain before the year's business is cleared up. The ship-building companies, which also need 16,000 to 20,000 tons of plates between now and the first of the year for new lake vessels, are preparing to file specifications.

Pig iron remained firm during the week, there being some buying for next year's delivery, with no change in prices. Scrap consumers bought more freely. Wrought scrap is up half a dollar, steel has made a new high mark for the year, and malleable, cast, borings and other grades of material also show higher values. Old car wheels have been jockeyed up \$1.50 for the week. Foundries are actually buying wheels at \$18.50 and \$19, and there are predictions that they will go to \$20. Heavy melting steel scrap sold for \$16 to \$16.25; No. 1 railroad wrought at \$16 and railroad malleable at \$15 and \$15.25.

Southern Ohio Iron To Follow Birmingham Advance.

CINCINNATI—Northern iron producers, who had been holding foundry grades at \$16, Ironton, for this year's delivery and \$16.25 to \$16.50 for the first half of 1910, showed an inclination toward the latter part of the week to advance prices following the bullish movement inaugurated at Birmingham. Southern furnaces have entirely withdrawn the \$13.50 quotations for this year's delivery, and are asking \$14 flat, Birmingham, for the remainder of this year, and \$14.50 for the first half

of 1910. A Michigan consumer secured 1,000 tons of Southern No. 2 foundry at \$14, Birmingham, for next year, but it is said this price cannot be duplicated. Inquiries the last of the week for Bessemer and basic for next year's deliveries aggregated about 20,000 tons. Furnace coke, meantime, is nearing the \$2.50 price for prompt delivery, and some dealers are asking as high as \$2.70 and \$3 for Connellsville and Pocahontas, on a year's contract from date. There is a continued shortage here in sheets and plates, which has resulted in the payment of some substantial premiums.

In their special report for the Industrial World, Rogers, Brown & Company say this week:

Continued brisk business with prices on a higher plane mark the pig iron situation for the week. Strength and buoyancy in all lines accompany the movement in pig iron and large contracts for steel-making iron have been placed, including Bessemer sales in Pittsburgh and basic sales in the East. Reports that large consumers heretofore manufacturing the bulk of pig iron used by them will be good purchasers from now on, has stimulated the market.

Dininclination of furnaces to quote for next year is as much in evidence as ever and several of those which have been offering for the first quarter and first six months of 1910 have filled their order books to a point satisfactory to them and are refusing further business for the time being. The larger concerns continue to buy heavily and the average consumer continues to show interest in supply of pig iron to July 1, 1910.

The car shortage is becoming acute and promises to be a very active factor in shipping both pig iron and coke from now on, in spite of the railroads continuing to place liberal orders for rolling stock.

Coke is now certainly on the active list and prices have advanced sharply on all grades. Buyers are somewhat less disposed to place contracts because of the recent sharp advance, but ovens are firm and other advances are expected. The output in all districts is increasing and being promptly taken as far as it is possible for the railroads to handle it. Shortage of labor is still a big item and will so continue. Several large furnace contracts have been placed for fuel during the first half of next year at price in advance of what they have been paying for some time past. Some producers in the Connellsville field are so well fixed regarding sales that they prefer not to quote, or when they do it is only at a price considerably higher than they have hitherto sold.

Southern Iron Makes Unexpected Advance to \$14.50.

BIRMINGHAM—Southern iron this week rose to \$14.50 for next year's delivery. An independent spirit prevails among Southern ironmakers, and not a few of the producers of standard brands are limiting their acceptance of shipments to special customers at current quotations and restricting next year's delivery as far as possible to the

first quarter. Prompt No. 2 foundry was sold a week ago at \$13.50 Birmingham, but to-day it is doubtful if any can be had at \$14. All quotations at \$14 for 1910 delivery have been withdrawn.

Stocks have been greatly reduced. The blowing in of the furnace at North Birmingham belonging to the Sloss-Sheffield Steel & Iron Company, which has been undergoing repairing for some time, will be followed by the blowing in shortly of the third furnace at Thomas, near here, belonging to the Republic Iron & Steel Company, and another furnace belonging to the Tennessee Coal, Iron & Railroad Company. Previous to this, announcement was made that the Southern Iron & Steel Company, successor to the Southern Steel Company, would by the middle of the coming month be ready to start up at least three of its furnaces. This company will need about all the iron it can manufacture for the steel plant at Gadsden, Ala. The Tennessee Coal, Iron & Railroad Company is working on its order of 110,000 rails for export.

A new plant is to be established by the Hays Rapid Tunneling & Mining Machinery Company, Birmingham, for the equipment of which considerable new machinery will likely be purchased. The company has purchased three acres of ground at Queenstown, near Birmingham, upon which it will erect a plant to cost about \$20,000. The plans for the plant are understood to have been approved by the Board of Directors, and it is probable that construction work will be started at an early date. The company, which is capitalized at \$1,000,000, will manufacture mining and tunneling machinery, turbines, mine pumps, etc.

Threat of Foreign Iron; Steel for New Battleships.

PHILADELPHIA—The threat of possible imports of foreign iron had little effect on the tone of the local pig iron market this week, and trend of the local market was toward \$18.50 for No. 2X foundry, with \$18 for No. 2 plain. Cargo lots of Middlesbrough foundry iron have been offered locally, though prices delivered in Philadelphia are still a little above the local market. Foreign basic iron also has been offered, but the market abroad is rising in sympathy with the market here, and thus far there has been no chance of consumer and importer getting together. Small lots of iron are easier to get at the ruling quotations than larger tonnages, and No. 2X iron for 1910 delivery runs as high as \$18.75 and \$19, delivered. There are predictions that this price cannot be maintained, but thus far the furnace inter-

ests are not urging consumers to buy heavily for next year, even at these figures. For this year, No. 2X sold at \$18 and upward.

Eastern basic is still held at \$18, delivered, for first quarter of 1910, two sales, aggregating 18,000 tons, having been reported at that figure. Several furnace interests, however, refuse to quote under \$18.50 for any delivery next year. There is practically no basic in the market for next year's delivery, but the buyers who went into Western Pennsylvania for a considerable tonnage two weeks ago seem to have got enough to tide them over. Two new furnaces have been put in blast—one by the Pennsylvania Steel Company, at Lebanon, and the other by the Warwick Iron Company, the latter to go on merchant iron. Pipe irons are in very active demand. About 1,000 tons of Northern car wheel iron also were taken up promptly by a local consumer.

The official awards to the Cramps and the New York company of the government contracts for the two new battle-ships, have been followed by intimations to Eastern plate manufacturers that the builders will have plate specifications ready within a few weeks. Only a few scattering contracts are reported in structural lines—among them several bridges on the Lehigh to the Pennsylvania Steel Company; and 500 tons on the Norfolk & Western to the American Bridge Company. The Standard Cast Iron Pipe & Foundry Company took a contract for 3,000 tons of 24-inch pipe from the city of Philadelphia.

The week has seen a stiffening of prices in iron and steel scrap. Heavy melting steel sold up to \$18, delivered. Considerable scrap is to be brought from the South by ocean cargo. The joint buying agents for the associated Eastern mills secured large tonnages from the railroad lists this month. Old rails for re-rolling are selling as high as \$19.

Coke on the Jump; New High Prices Reached.

CONNELLSVILLE — "Three-dollar coke for 1910" seems to be the slogan of the entire coke region at present. Good grades of foundry coke are being quoted at \$2.65 and \$2.75 for immediate delivery. Spot furnace coke brought all the way from \$2.25 to \$2.40 per ton. For next year's delivery the "Courier" in its current issue quotes these prices, which it declares to be conservative:

First-class furnace\$2.60@2.70
First-class foundry\$2.85@3.00

The number of ovens in blast in the upper and lower Connellsville fields for the week ending September 11, according to the "Courier's" tables, was 32,728, as

against 32,474 the week previous.

The aggregate production in both regions made a gain of 3,248 tons over the previous week, when the production was 421,320 tons, while showing a slight falling off in cars, though perhaps not in tons.

The Frick company, the largest producer in the two regions, on account of a lack of labor principally, made but one change during the week, when they brought Edeborn in the Lower Connellsville region from 450 ovens to 500, their full capacity at that plant.

Secretary George B. Irvin, of the Producers' Association, in his weekly report, says:

Our reports show, at the close of last week, 32,828 of the 38,142 ovens in the region, active, or an average of 86.1 per cent operating. The net increase in active ovens over the preceding week was 295, a gain of 7-10 of one per cent. The estimated production of these ovens was 417,491 tons, as compared with 412,262 tons the week before.

The production for the week is less than the rated capacities of the ovens, due to the labor shortage causing a number of plants to operate, to some extent, irregularly. Ovens are lost daily by reason of not getting sufficient coal to charge them.

Ovens aggregating more than 100 were dropped out at four plants last week owing to a shortage of miners. These will be re-fired and additional ovens put in as fast as miners can be obtained.

Prices are firm and advancing almost daily. Last week two large sales were made of spot furnace coke, one at \$2.25 and the other at \$2.40 per ton. Sales were made by two concerns for large tonnage of furnace coke netting the producer \$2.65 per ton at ovens.

According to the reports we have the Frick Coke Company are now operating nearly 94 per cent; ovens belonging to furnace interests, 79.3 per cent; the independent ovens 77.1 per cent, or a general average of 86.1 per cent of all the ovens are now making coke. Of the idle ovens (5,314) in the region, a number are in bad repair and also a number are in a district making a lower grade coke than that in the Connellsville and Lower Connellsville districts proper.

Information that the Stewart Iron Company will soon blow in its furnace at Sharon and that the ovens at Stewart will resume again this week has been received.

Belgian Competition in Staffordshire.

The London "Colliery Guardian," in its Birmingham trade review of September 10, says:

Practically all the blast furnaces are booked up to the end of the year, and some if they were so disposed could take contracts into next year, but they are not eager in this direction. These enhanced prices for raw material, combined with the prospect of dearer fuel in the future, naturally had their effect on the finished iron department. The time is not ripe for any declaration with regard to marked bars, but some firms engaged in the manufacture of unmarked bars have notified their customers during the week of a 5s increase. Employ-

ment is being increased, as works in the North Staffordshire district which for a considerable period have not been making more than three or four days a week are now running full time. Common iron for nuts and bolts is proving difficult to lift. Here Belgian competition has not yet ceased from troubling, though as things improve on the Continent it will gradually be withdrawn. The fact that the price of the foreign iron coming into the district has been increased a shade may be regarded as an indication that things are tending in this direction. The galvanized sheet market is gradually recovering. For orders of small bulk £11 10s is insisted upon with a minimum of £11 5s for larger orders. All the leading makers have well filled books, and are again beginning to feel fairly independent. The black-sheet trade is less strong, and the mills which were shut down some time ago owing to unremunerative prices have not yet been reopened.

"IRON AGE" CHANGES HANDS.

Williams Family Retires from Management of Famous Old Property.

A change in the ownership of "The Iron Age," one of the oldest trade journals in this country, was announced September 11, at the office of that publication, Nos. 14 and 16 Park Place. The concern which will hereafter control the magazine is the Root Newspaper Association. David Williams, of the David Williams Company, formerly the publishers, retires. The Root Newspaper Association includes Charles T. Root, Charles G. Phillips, I. A. Mekeel and William H. Taylor, the latter until recently the publisher of "The Engineer."

The management announces that no change in policy or in the personnel of the office is contemplated. Charles Kirchoff, R. R. Williams, George W. Cope and A. I. Findlay, who have been in editorial control for a number of years, will continue in their respective capacities. It was said that the price paid was \$1,500,000.

"The Iron Age" was founded at Middletown, N. Y., by John Williams under the name of "The Hardware Man's Newspaper," which was changed in 1859 to "The Iron Age." His son, David Williams, came into control in 1868. At the time of the sale he was president and the heaviest stockholder, with his brother, Richard R. Williams as treasurer. Charles T. Root is president of the Root Newspaper Association and Franklin T. Root is secretary. They are the present publishers of "The Dry Goods Economist," a leading publication in that trade, and are interested in several other trade publications.

Besides "The Iron Age," many technical books and "The Metal Worker" and "Carpentry and Building" were taken over in the transfer.

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and Various Finished Iron and Steel Products.

July 31.	July 24	July 17.	July 12	July 5.	June 27	June 21.	June 14.	June 7	1908 Sept 19.
16.40@16.90	16.40@16.90	16.40	16.15@16.40	16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15
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16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.15@16.40	15.90@15.16	15.90@16.15	15.90@16.15
15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.40@15.65	15.40@15.65
15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.50@15.65	15.40@15.65	15.65@15.90
14.90	14.90	14.90	14.65@14.90	14.00@15.15	14.90@15.15	14.90@15.15	14.50@14.65	14.50@14.65	14.40@14.65
20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	15.90@20.00	19.50@20.00	19.00@19.50	19.00@19.50	21.25@21.75
67.00@68.00	62.00@63.00	62.00@63.00	63.00@64.00	63.00@64.00	61.00@62.00	62.00@64.00	61.00@62.00	61.00@62.00	69.00@70.00
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26.00	25.00@26.00	24.00@25.00	24.00@25.00	23.50@24.00	23.50@24.00	23.00@24.00	23.00	23.00	25.00
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25.50@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	27.50
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27.00@28.00	27.00@28.00	27.00@28.00	26.50@27.00	26.50@27.00	26.50@27.00	26.75@27.75	26.75@27.75	26.75@27.75	24.00@26.00
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32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	34.00@36.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	50.00
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	71.00
27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	26.00	26.00	26.00	32.00
29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	34.00
27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	26.00	26.00	26.00	32.00
29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	34.00
28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00	27.00	27.00	27.00	27.00	33.00
28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00	27.00	27.00	27.00	27.00	32.00
27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	26.00	26.00	26.00	32.00
29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	34.00
29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	34.00
27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	26.00	26.00	32.00
29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	28.00	34.00
29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	36.00
23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	24.00	24.00	24.00	24.00	24.00	28.00
25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	28.00
25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00	28.00
29.00	29.00	29.00	28.00@29.00	29.00	29.00	29.00	26.00@27.00	26.00@27.00	28.00

STEEL PLATES.

Base prices, tank quality, ¼-in. thick, per 100 lbs., f. o. b., Pittsburgh:

6¼ to 100 inches wide\$1.40

Extras over base price—

3-16 inch thick10

Gauges 7 and 815

Gauge 925

Gauges 10 and 1125

Circles20

Sketches10

Boiler and Flange quality10

Marine Steel40

Widths over 100, to 110 in05

Widths over 110, to 115 in10

Widths over 115, to 120 in15

Widths over 120, to 125 in25

Widths over 125, to 130 in50

Widths over 130 in 1.00

IRON AND STEEL SCRAP.

Old steel rails, re-rolling..\$17.50

Old steel rails, remelting.. 17.75 \$17.50

Steel axles 21.50 22.00

Heavy melting scrap 17.25 18.00

Low phosphorus 21.00 21.50

Sheet scrap 15.25 15.75

No. 1 wrought scrap 17.50 18.00

Machine shop turnings ... 13.00 13.50

Cast borings 11.00 11.50

No. 1 cast 15.75 16.00

Old car wheels 17.25 17.50

Old iron rails 18.50 19.00

Axle turnings 14.00 14.50

Railway malleable 16.00 16.25

TIN AND TERNE PLATES.

Official prices, f. o. b., Pittsburgh—
Coke tins:

14x20, I. C.\$3.55

14x20, 100 lbs. 3.40

14x20, 95 lbs. 3.35

14x20, 90 lbs. 3.30

Charcoal tins:

A Grade, 14x20, I. C. 4.15

A Grade, 14x20, 100 lbs. 4.00

Ternes:

20x28, I. C. 6.80

20x28, 200 lbs. 6.50

STEEL RAILS.

Fifty pounds and Heavier—

500-ton lots and over\$28.00

Car load lots 30.00

Less than car load lots 32.00

Light Rails—

12 and 14 pounds\$30.00

16, 20 and 25 pounds 28.00

30 and 35 pounds 28.00

40 and 45 pounds 28.00

Relaying Rails

Subject to inspection, f. o. b. Pitts-
burgh:

Stand'd 50 lbs. & heavier..\$22.00 \$22.50

25 to 40 lbs. 23.00 23.50

16 to 20-pound rails 24.00 24.50

12-pound rails 25.00 25.50

STEEL SHEETS.

Official prices, per 100 lbs., f. o. b.,
Pittsburgh—

Gauge. Black. Galv.

30\$2.35 \$3.60

29 2.25 2.35

28 2.20 3.25

27 2.15 3.05

25-26 2.10 2.85

22-24 2.05 2.65

17-21 2.00 2.50

15-16 1.95 2.40

13-14 1.90 2.30

Blue Annealed.

10 and heavier\$1.65

11-12 1.70

13-14 1.75

15-16 1.85

Corrugated Roofing.

Per square, 28 gauge, f. o. b. Pitts-
burgh—

Painted\$1.55

Galvanized 2.80

WIRE AND NAILS.

Prices to jobbers in car load lots, per
100 lbs.; retailers 5 cents additional:

Wire nails\$1.80

Plain wire 1.60

Painted barb. wire 1.80

Galvanized wire 2.10

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per
cent pure are held at 24c per pound in
ton lots.

For small lots of 100 pounds and over
advances of 3c per pound are charged.

Rods and wire.....base price 32 cents

Sheetsbase price 34 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

Per Ton.

Mine-run\$1.10@1.20

¾-inch lump 1.20@1.30

1¼-inch lump 1.30@1.40

3-inch lump 1.55@1.65

1¼-inch nut 1.10@1.20

¾-inch slack55@ .65

At Buffalo—

Pgh. Frep't

Mine-run\$2.35 2.05

¾-inch lump 2.45 2.15

1¼-inch lump 2.55 2.25

¾-inch slack 1.85 1.70

At Cleveland—

Pgh. No. 8

Mine-run\$2.10 \$1.80

¾-inch lump 2.20 1.90

1¼-inch lump 2.25 2.00

1¼-inch nut 2.10 1.80

¾-inch slack 1.55 1.45

At Detroit—

Mine-run\$2.50 \$2.05

¾-inch lump 2.60 2.15

1¼-inch lump 2.70 2.25

1¼-inch nut 2.50 2.05

¾-inch slack 2.00 1.65

At Chicago—

Mine-run\$3.00 \$2.55

¾-inch lump 3.10 2.65

1¼-inch lump 3.20 2.75

1¼-inch nut 3.00 2.55

¾-inch slack 2.45 2.25

MERCHANT PIPE.

Base discounts, car load lots, subject
to one point and 5 per cent extra to
large jobbers.

Steel
Black. Galv

⅛ and ¼-inch72 56

⅜-inch73 59

½-inch76 64

¾ to 6-inch80 70

7 to 12-inch75 60

Extra strong plain ends—

⅛ to ⅜-inch65 53

½ to 4-inch72 60

4½ to 8-inch68 56

Double extra strong—

½ to 8-inch61 50

WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe
car load prices to consumers; prices to
jobbers one point and 5 per cent.

¼-inch69 ..

⅛ and ⅜-inch70 56

½-inch73 61

¾ to 6-inch77 67

7 to 12-inch72 57

Extra Strong and Plain Ends—

⅛, ¼ and ⅜-inch62 50

½ to 4-inch inclusive69 57

4½ to 8-inch, inclusive65 53

Double Extra Heavy plain Ends—

½ to 8-inch, inclusive58 47

BOILER TUBES.

Steel Iron.

1 to 1½ inches50 45

1¾ to 2¼ inches62 45

2½ inches64 50

3¾ to 5 inches70 57

6 to 13 inches62 45

Less than car load lots, two points less.

2½ inches and smaller, over 18 feet, 10
per cent, net extra.

2¾ inches and larger, over 22 feet, 10
per cent net extra.

MERCHANT STEEL.

Cold rolled and ground shafting, 60
per cent off, car load lots; 56 per cent
off less than car load lots; delivered in
base territory:

Planished Tire Steel\$1.40@1.50

Iron finish, up to 1½x½ in. .. 1.35@1.45

Iron finish, 1½x½ in. and over 1.20@1.30

Toe Calk Steel 1.70@1.80

Railway Spring Steel 1.75@1.85

Cutter Shoe 1.95@2.05

Flat Sleigh Shoe 1.55@1.65

Crucible Tool Steel 7.00@8.00

Open-Hearth Spring Steel .. 2.05@2.30

Freight Rates On Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig Iron, from Virginia furnaces to Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	\$2.35	\$3.60	\$3.20	\$2.35	\$3.30	\$3.35
Bristol		3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.35	3.60	3.20	3.00	3.95	4.00
Kayula, Ivanhoe, Rural Retreat ...	2.35	3.60	3.20	3.40	4.35	4.40
Pulaski, E. Radford, Max Meadows. 2.90	2.35	3.60	3.20	3.25	4.20	4.25

Pig Iron from Birmingham, Ala., tons of 2,240 lbs. to—

Boston, by water	\$4.60
Chicago	4.35
Cincinnati and Ohio River	3.25
Cleveland	4.35
Milwaukee and Northwest	4.75
New York, all rail	5.95
New York, rail and water	4.25
Philadelphia, all rail	5.00
Philadelphia, rail and water	4.00
Pittsburgh	4.90
St. Louis	3.75

To Pittsburgh from—

Dunbar Furnaces .....	.85
Kittanning Furnaces .....	.60
Scottdale Furnaces .....	.85
Valley Furnaces .....	.90
Wheeling .....	.90
Valley Furnaces to—	
Cleveland .....	.90

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	Billets.
Baltimore	\$2.15	\$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville .....	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va. ....	.90	1.00
Youngstown .....	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango Valleys ..	1.00	
Wheeling	1.00	

COKE.

From Connellsville region, per 2,000 pounds to—	
Boston	\$3.50
Buffalo	1.00
Baltimore	2.15

Cleveland	1.65
Columbus	1.65
Cincinnati	2.10
Chicago	2.65
East St. Louis	2.80
Hamilton, Ont.	2.20
Joilet	2.65
Louisville	2.65
New York	2.85
Pittsburgh .....	.80
Philadelphia	2.15
Richmond, Va.	3.04
Toledo	2.25
Valley Furnaces	1.35

TIN PLATE.

	C.L.	L.C.L.
Per 100 lbs., Pittsburgh to—		
Boston, Mass	18	21
Albany, N. Y.	16	19
Baltimore, Md.	14½	17½
Birmingham, Ala.	41	68
Cleveland, O.	10	13
Columbus, O.	12	15
Cincinnati, O.	15	18
Concord, N. H.	18	21
Charlotte, N. C.	39	61
Charleston, S. C.	33	70
Charleston, rail and water..	23½	31
Covington, Ky.	15	18
Chattanooga, Tenn.	33	65
Chicago, Ill.	18	21
Canadaigua, N. Y.	13½	16
Des Moines, Ia.	37½	48½
Detroit, Mich.	15	18
Denver, Mich.	84	118
Dover, Del.	17	20
Buffalo, N. Y.	11	13
East St. Louis	22½	26
Hartford, Conn.	18	21
Indianapolis, Ind.	17	19½
Louisville, Ky.	18	21
Montpelier, Vt.	21	24
Minneapolis, Minn.	32	42
New York	16	19
Norfolk, Va.	20	24
Natchez, Miss.	32	61
Portland, Me.	18	21
Providence, R. I.	18	21
Philadelphia, Pa.	15	18
Richmond, Va.	20	24
Rochester, N. Y.	11½	13½
Syracuse, N. Y.	13½	16
St. Louis, Mo.	22½	26
Terre Haute, Ind.	18	21
Topeka, Kas.	54½	68
Trenton, N. J.	16	19

FINISHED PRODUCTS.

Finished Steel Products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire, nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—

Albany .....	.16
Buffalo .....	.11
Boston .....	.18
Baltimore .....	.14½
Canadaigua .....	.13½
Cleveland .....	.10
Columbus .....	.12
Cincinnati .....	.15
Chicago .....	.18
Harrisburg .....	.14½
Louisville .....	.18
New York .....	.16
Norfolk .....	.20
Philadelphia .....	.15
Rochester .....	.11½
Richmond .....	.20
Scranton .....	.15
St. Louis .....	.23
Washington .....	.14½

To Pittsburgh from—

Mahoning and Shenango Valleys..	.05
Wheeling .....	.05

COAL.

Coal Rates from Mines—

To Ashtabula	\$1.00
To Allegheny, Pan'dle Ft. W. trk..	.43
To Allegheny, West Penn tracks..	.48
To Allegheny, B. & O. ....	.35
To Pittsburgh, P. R. R. Main Line..	.43
To Pittsburgh, B. & A. V. Div..	.48
To Pittsburgh, B. & O. ....	.33
To Valleys .....	.70
To Buffalo	1.25
To Cleveland	1.00
To Detroit	1.40
To Chicago	1.90
To New York, gross ton	2.25
To Philadelphia, gross ton	2.00

From Freeport—

To Buffalo	1.10
For Lake Shipments— Cargo. Fuel.	
To Ashtabula .....	.88
To Cleveland .....	.88
To Erie .....	.88

West Virginia rates from mines—

To Chicago	1.90
To seaboard points, gross ton	1.80

From No. 8, of Ohio—

To Cleveland .....	.90
To Chicago	1.65
To Detroit	1.15

Shortage of Rolling Stock Provokes Some Supplementary Equipment Orders

B. & O. LEADS LIST WITH ORDERS FOR OVER 2,000 CARS. WESTERN AND SOUTHERN ROADS PLACE ALLOTMENTS. EASTERN LINES IN MARKET.

As a result of the evident impending car shortage, supplementary orders have been placed by a number of the railroads with the equipment manufacturers. The Baltimore & Ohio leads in the new orders placed during the week—its allotments of cars and locomotives amounting to more than \$3,500,000—which makes a total of nearly \$10,000,000 of new equipment ordered by this road since August 1. The new orders announced during the week were:

Baltimore & Ohio—With Baldwin Locomotive works, 26 Atlantic type passenger locomotives; with American Locomotive Company, Richmond (Va.) works, 34 consolidated freight locomotives; with Ralston Steel Car Company of Columbus, O., 500 ventilated box cars; with Whipple Car Company, of Chicago, 500 refrigerator cars; with Standard Steel Car Company, of Butler, Pa., 1,000 box cars; with General Electric Company, two electric locomotives.

Atchison, Topeka & Santa Fe—1,000 refrigerator cars, American Car & Foundry Company.

New Orleans & Northwestern—100 box cars and 100 gondolas, American Car & Foundry Company.

Burlington—1,000 stock cars, Mt. Vernon Car Manufacturing Company; 10 locomotives from Baldwin works.

Northern Pacific—450 box cars, 250 automobile cars, 800 flat cars, to be built at its own shops.

Illinois Central—13 locomotives from Baldwin works.

Rock Island—400 flat cars from American Car & Foundry Company; 500 furniture cars from Standard Steel Car Company (in addition to cars already noted by the Industrial World, two weeks ago).

Mather Stock Company—100 30-ton refrigerator cars, with Standard Steel Car Company.

In addition, these roads are now in the market for a total of 5,500 cars and about 250 locomotives:

New York Central—600 gondolas, 400 flat cars, 1,000 box cars, 230 locomotives.

New Orleans & Northwestern—200 freight cars.

Lake Superior & Ishpeming—50 40-ton flat cars.

Pennsylvania—2,000 freight cars of various types.

Cumberland & Pennsylvania—500 freight cars.

Acheson, Topeka & Santa Fe—500 refrigerator cars.

Seaboard Air Line—1,000 box cars; 25 stock cars; 40 automobile cars.

Gilmore & Pittsburgh Railroad, W. A. McCutcheon president—100 steel gondola general service cars with a capacity of 100,000 pounds and 100 box cars with a capacity of 80,000 pounds. These cars

are to be used on the road of the company, which, when completed, will extend 120 miles from Armstead, Mont., on the Oregon Short Line, to Gilmore, Idaho. It is owned by the Pittsburgh-Idaho company.

The Schoen Steel wheel plant of the Carnegie Steel Company, has received an order for 16,800 pressed steel wheels from the Pennsylvania, and 8,000 wheels for the Baltimore & Ohio, for the new freight equipment these companies are building in their own shops. The reorganized Chicago Great Western also is said to be preparing specifications for 2,450 new freight cars and 30 locomotives.

A TWENTY-TRACK TERMINAL.

Plans Filed for Equipment of Pennsy's New York Station.

The Westinghouse-Church-Kerr Company, engineers for the Pennsylvania Terminal & Tunnel Railroad Company, last week filed with the New York building superintendent a series of diagrams of the proposed plan of the subway train yards and track arrangement of the Manhattan terminal, extending from Seventh to Tenth avenues, and bounded by Thirtyfirst and Thirty-third streets.

The construction work on these yards is being pushed actively. Diagrams and plans for the four steel and concrete signal cabins to shelter the train dispatching and switching apparatus have been filed. The diagrams show that there are to be 11 passenger platforms in the terminal passenger station proper on the blocks between Seventh and Eighth avenues, dividing 20 sets of tracks.

Of these tracks, 18 will lead to the two tunnels of the Long Island Railroad Company connecting by the four tubes under the East River with the Long Island terminal station. Two large additional platforms for the mail trains and postoffice service will be installed in the center of the train yard. These will permit the unloading of 23 cars at a time right alongside the west end of the trucking subway.

The tunnel leading from the two great Pennsylvania tubes under the North River will enter the Manhattan train yard at Thirty-second street and Tenth avenue, where there will be yard space to accommodate a string of 34 Pennsylvania cars on the south side and 31 Long Island Railroad cars on the north side of the central trackway leading into the big passenger station. On the south at Ninth avenue, there will be another

yard, with a platform for 55 express cars. Just east of these yards will be two other larger ones, the northern one having track room for 50 Long Island cars and the southern one room for 40 Pennsylvania cars.

All told there are to be 16 platforms, some of them equipped with passenger elevators, others with freight elevators and still others with spiral chutes and bucket conveyors. The yard between Eighth and Ninth avenues is to be roofed over after the track equipment is installed.

To Electrify Vandalia?

Several officials of the Vandalia Railroad have been making a tour of inspection of the line with a view, it is said, of electrifying the road. Experiments with cars that have been equipped with motors are now being made at Terre Haute, Ind., and plans for their operation are assuming shape. It is also planned to install this service between South Bend, Ind., and Logansport.

Track Elevation for Lackawanna.

Press reports from Orange, N. J., declare the belief of municipal officials there that the Lackawanna Railroad has decided to go ahead with track elevation, if it can, and thus forestall anything East Orange may do to cause it to depress its roadbed in that city.

Detroit-Grand Rapids Interurban.

A mortgage for \$5,000,000, running to the Union Trust Company, of Detroit, Mich., has been filed by the Detroit, Lansing & Grand Rapids Railway. This company recently filed articles of incorporation in Lansing, naming Oliver H. Lau as the principal incorporator. The company was then formed to build an electric railway from Detroit to Grand Rapids, via Lansing. The entire right-of-way had been secured from Detroit to Lansing and part of the way from Lansing to Grand Rapids. The method of financing, the filing of the mortgage to the Union Trust Company covers the franchises and all other property of the construction company.

Opening Franklin-Clearfield Line.

Traffic, both passenger and freight, on the new Franklin & Clearfield Railroad, will open Sunday, September 26. Announcement to that effect was made Friday by W. F. Schaff, assistant division superintendent of the Franklin division of the Lake Shore Railroad, following a meeting of the Lake Shore officials in Cleveland. This announcement of the opening was supplemented by the intelligence that two through passenger trains between New York and Chicago

will run daily. These through passenger trains are entirely new additions to the New York Central system via Buffalo. The new route is 70 miles less than the present old line.

The system's new route is from Chicago to Ashtabula over the main line of the Lake Shore; to Franklin over the old Franklin division; thence to Rose Siding, near Brookville, over the new Franklin & Clearfield; to Falls Creek over the Pennsylvania, Low Grade division; to Clearfield over the Buffalo, Rochester & Pittsburgh; to Newberry Junction and Williamsport over the Beech Creek division of the New York Central; to Philadelphia over the Philadelphia & Reading. New York trains will leave the P. R. R. at Tamaqua, thence over the new Jersey Central railroad.

To Build 36-Mile Line.

Bids have been closed and contracts will be let within the next 10 days, for the building of 36 miles of new railroad to be known as the Brookville & Mahoning Railroad, from Brookville, Pa., to Mahoning. The new line will be an extension of the Pittsburgh, Shawmut & Northern, and will bring that road within 50 miles of Pittsburgh.

The 36 miles on which bids were taken, will cost between \$75,000 and \$80,000 a mile, and will include one large bridge to cross the Allegheny River, six tunnels, six trestles and fills.

Eliminating Bolt Evil.

The "Railway Engineering Review" in discussing Pittsburgh industries and new developments in the manufacture of railway supplies, tell of experiments with the new lock or bolt manufactured by the Interlocking Nut & Bolt Company, of Pittsburgh, of which R. A. Clark is president. For several years the railroads have experienced much difficulty with bolts in the track on account of salt water dripping from refrigerator cars.

A committee appointed a year or so ago at the National convention of the superintendents of motive power at Atlantic City, after a thorough investigation, reported that they have tried a number of experiments and that all of them had failed.

The "Review" says:

"Serious damage is done by salt water drippings from refrigerator cars to the bolts on the tracks, as it soon rusts the end of the bolt that projects beyond and renders it impossible to remove the nut or tighten it up. The Interlocking Nut & Bolt Company, of Pittsburgh, Pa., manufacturers of the Clark nut lock, which, they claim, avoids difficulty from this source. In the application of this

lock care is taken that the end of the bolt is just even with the outside of the nut, and the bolt being thus housed by the nut there is none of it exposed to the action of the salt water. No spring washers are used and the nut is brought tightly against the angle bar, so that practically no salt water can get between the nut and the bar to affect the thread on the inside of the nut. Hence, as none of the thread projects beyond the nut, the lock is protected from the salt water by this device."

RIDE IN GASOLINE CAR.

Erie Railroad Installs Novel Service on Branch Road.

The Erie Railroad's new gasoline motor car for passenger service between Bradford, Pa., and Salamanca, was installed on September 6, and is working successfully.

The car is about 70 feet long and has a seating capacity of 75. It is built of steel and shaped like a submarine boat. The car is well lighted by round windows 25 inches in diameter and at night may be brilliantly illuminated by acetylene lights. It is propelled by a 200-horse power gasoline engine that is geared to run 38 miles per hour, although it can be geared to much higher speed if desired. The car has a ladies' compartment, a smoking compartment and a small compartment for baggage and express. It is intended to do away with one of the passenger trains that have for years made daily trips between Bradford and Carrollton or Salamanca. Later this one car may do all the passenger business on the Bradford branch.

To Take Over Kentucky Lines.

Announcement was made in Philadelphia during the week by Samuel M. Clement, Jr., an attorney, that the Kentucky Rapid Transit Company, with a capital of \$10,000,000, had been chartered at Dover, Del., the corporation being authorized to take over traction companies in Kentucky. The principal operations of the company at present will be at Louisville, Lexington and Frankfort.

The company, which was organized by Boston, New York and Philadelphia capitalists, is also authorized to operate electric light and gas plants. The directors and officers of the company will be chosen on September 28.

Trying Out New Haven Cars.

Electric cars being built for the New York, New Haven & Hartford Railroad have been tried out during the past fortnight on the Interworks railroad, running between the Westinghouse Elec-

tric works, at East Pittsburgh, and the Westinghouse airbrake works at Wilmerding. The cars are being built by the Westinghouse Electric & Manufacturing Company.

Combination motor car 4020 was tried the end of the week, and a trial run was made from East Pittsburgh to Pittsburgh over the tracks of the Pennsylvania Railroad. The cars are designed to furnish their own power in the event of the electric locomotives now in use on the New York, New Haven & Hartford line giving out. There are as large as the ordinary railroad coach, and the space required for the motorman is small. The trolleys are of the diamond-frame pattern.

New Isthmian Route.

The announcement is made by the Nicaraguan Government that work is shortly to be resumed on the railroad between San Miguelilo, on Lake Nicaragua, in Nicaragua, and Monkey Point on the Atlantic coast of that country. Of the £2,250,000 recently borrowed by Nicaragua £430,000 will be used for the railroad. It will be 118 miles long. Three and a half miles already have been constructed.

The new line, it is expected, will open up an immensely rich and practically unexplored mineral and agricultural region and also will constitute a new trans-Isthmian transportation service. The time from Corinto on the Pacific to Monkey Point on the Atlantic will be 36 hours.

Testing New Automatic Stop.

At Oil City, Pa., frequent tests have been made in the last two weeks, in the presence of railroad experts and inventors, of the new safety automatic stop invented by H. L. Rider, of Oil City. All are said to have been successful. The new device, of which previous mention has been made in the Industrial World, automatically sets the air brakes on a train should it run past a danger signal. The train stop can be used with or without visual signals, with automatic or manual switches and on a single or a double track. The stopping element is in two parts, one attached to the locomotive and the other to the track.

On the locomotive a small cylinder or equalizing valve is provided. A rod extends downward from the piston in this cylinder and rests upon the head of a trip handle which is pinioned to a suspension frame. The trip handle extends downward from the frame and is carried along by the engine in a position on a line with the outside of the rail. The feed port of the cylinder is connected into the train air line. The piston closes

the outlet pipe until it is permitted to move downward when the air from the train pipe enters a receiving cylinder causing the brakes to be applied. The exit of the air from the train line can be regulated by a valve and the train stopped accordingly.

The track instrument is principally a solenoid enclosed in a box attached to the ties and buried in the ground. When the train passes a danger signal, the plunger, to which a trip is attached, is forced upward two and one-half inches above the rail, so that the trip lever will come in contact with the trip handle of the locomotive, thereby setting the brakes. The movement of an engine over any block section sets the track instrument, and if a visual signal is used in connection with the track instrument they work in unison. If the visual signal is at danger the instrument is at danger, and if the visual signal is unheeded by an engineman and he should attempt to run past the signal, the trip lever will come in contact with the trip handle on the engine, setting the brakes, which cannot be released until the engineman climbs from his cab and readjusts the trip handle. In winter, when the track is covered with snow and ice, the trip handle follows the furrow made by the wheel flanges, thereby avoiding all obstacles.

WEST VIRGINIA PROJECTS.

More Elkins Plans. Pennsylvania Capital Behind Raleigh County Scheme.

The Morgantown & Kinkwood, operating from Morgantown to Rowlesburg, W. Va., is to be extended to Parsons next spring, opening large coal and timber fields. The line is part of a contemplated railroad from Morgantown to tidewater. Senator Elkins, of West Virginia, is the principal owner of the road.

A new line, to traverse one of the richest undeveloped coal fields of West Virginia, received its charter at Charleston, September 11, under the name of the Pocahontas Connecting Railroad. The projectors say they will build 20 miles of new road from Cirtsville to Jarrett's valley, the new line lying wholly within the boundaries of Raleigh county. The incorporators are: John G. Reading and Robert F. Allen, of Williamsport, Pa.; O. P. Fitzgerald, V. L. Black and George S. Couch, Jr., of Charleston.

The construction of this new feeder or lateral railway will emphasize the advantage realized by the State from the construction of the new Virginian railway through an undeveloped field which is probably richer in mineral resources than any other section of the State.

More railroad building is being done in Raleigh county than in any other

county of the State, and the mountainous section of Raleigh county lying west of Paint Creek, and covering the headwaters of Coal River, which will be traversed by the Pocahontas Connecting Railway, includes the largest coal vein development known throughout the Appalachian range. The new railroad will also mean much to that portion of Raleigh county through which it will run for prosperous towns and villages will follow this expenditure made largely by Pennsylvania capitalists, who have their plans complete.

According to the recent rumors the Little Kanawha Syndicate, composed of the Pennsylvania, Baltimore & Ohio and New York Central railroads which took over the Kanawha Valley is arranging to extend its lines to Walkersville, where connections will be made with the Coal and Coke.

A survey is now under way for a new railway which will extend along the Guyandotte River in West Virginia, crossing the Ohio at Huntington, thence due north through Ohio to McArthur Junction, where it will intersect with the C. H. & D. The new line will be 150 miles in length and will tap large coal fields in both States. J. P. Morgan is reported as backing, and the line will be known as the West Virginia & Northern.

New Stations and Terminals.

At the close of a meeting in St. Louis, September 13, President A. H. Joline, of the Board of Directors of the Missouri, Kansas & Texas Railroad, announced that that road would expend \$4,000,000 for freight terminals in St. Louis. Two hundred acres of land and a site for freight warehouses have been acquired in the heart of the business district. Work on the new terminals will begin at once.

At a cost of \$2,500,000 the Western Indiana has acquired title to a block of land on State street, in Chicago, which is to be the site of its proposed terminals.

At Marion, Ark., the Frisco Company is building yards, increasing its mechanical facilities, putting up a roundhouse, a storehouse, some other buildings and a cinder pit. A connecting line is being built to the Rock Island at an estimated cost of \$300,000.

Within one year Houston, Tex., will have the finest passenger station in the southwest, its aggregate cost to be not under \$1,000,000, and for which a contract has been awarded. Altogether, the freight and passenger depots, the terminals and the cost of the land upon which these are constructed will cost between \$4,000,000 and \$5,000,000.

At Duluth, Minn., Contractor F. H. Lounsberry has started work on the erection of a four-story concrete and

terra cotta passenger station for the Minneapolis, St. Paul & Sault Ste. Marie. The new station is to be built on Michagan street, Duluth, and cost \$100,000.

Plans are said to be under way by the Evansville & Terre Haute for putting up a large roundhouse at Evansville, Ind.

May Confiscate Rights-of-Way.

Extensive rights-of-way on the shores of Lake Michigan in the vicinity of Gary may be confiscated by the State of Illinois, as a result of action taken by the State authorities September 13. The United States steamer Nashville cruised along the Lake Michigan shore from north of Waukegan, Ill., almost to Gary, Ind., taking possession of all "filled land." The Chipfield legislative committee, which is trying to reclaim for the State all the made land, planted the State flag and coat of arms above every acre of made land, regardless of any other claimants.

The ownership of made land along the shore of Lake Michigan has been in controversy for many years. Many manufacturing concerns and a few railroads have extended their plant sites by filling in part of Lake Michigan.

For Steel Water Tanks.

Hereafter all water tanks used to supplying tenders of locomotives, along the Rock Island in Texas, will be built of metal instead of wood, and of greater capacity. The Texas & Pacific is building its new tanks of concrete and steel.

The Lackawanna is obtaining a water supply of 25,000 gallons an hour from the wells driven 700 feet deep on a mountain near Scranton. The work took two years to complete.

Motor Vehicles for Pennsy.

Horses used by the Pennsylvania for hauling are to be displaced by electric wagons. If these cannot be economically built in the company's shops at Altoona, some establishment engaged in such work will get a nice contract. The plan is to operate the vehicles with storage batteries.

Traction Mail Service.

The Illinois traction system is desirous of carrying mail between central Illinois cities and St. Louis, and a proposition has been submitted to the Post Office Department.

The Rome & Osceola.

The first shovelful of earth for the construction of the Rome & Osceola Railroad was turned at Rome, N. Y., September 13, by David Swancott, of Lee, a member of the board of directors, in the presence of other officers of

the company.

The road will run about 30 miles north into Lewis county, tapping a territory now without railroad facilities and opening a large area of virgin forest.

C. A. & C.'s Composite Telephones.

The Cleveland, Akron & Columbus recently installed a composite telephone circuit on its lines from Akron, O., to Columbus, 130 miles. The line is constructed of No. 9 copper, and has three intermediate telegraph offices between the terminal telephones. There are also three intermediate telephone stations connected to the line.

In connection with this service, the company has equipped a wrecking train with a portable composite telephone, which may be used.

Reinforced Concrete Fence.

The practical use and value of reinforced concrete has been further shown on the Long Island by the building of a fence 300 feet long and three inches thick at Atlantic avenue, Brooklyn. It is securely fastened to a large and heavy concrete curb.

New Line Into Pittsburgh.

News reports from Philadelphia say that Eastern capitalists have agreed to finance the proposed electric railway between East Liverpool and Pittsburgh. Estimates have been submitted by Moore Buchanan, of Morgantown, W. Va., and

T. H. Leed, of Pittsburgh, and the line has already been surveyed.

TO EXHIBIT AT DENVER.

Railway Appliance Manufacturers Who Have Secured Space.

Railway appliance exhibits will be made in the Denver auditorium by the following companies, during the coming convention of the American Street & Interurban Railway Association, which opens in that city October 4:

Avery Scale Company, N. Milwaukee; Automatic Car Coupler Company, Pasadena, Cal.; Atlas Railway Supply Company, Chicago; American Brake Shoe & Foundry Company, Mahwah, N. J.; American Steel & Wire Company, Chicago; Aluminum Company of America, New Kensington, Pa.; Automatic Ventilator Company, New York; Allis-Chalmers Company, Milwaukee.

Barber Car Company, York, Pa.; Buckeye Electric Company, Cleveland; J. G. Brill Company, Philadelphia; Buda Foundry & Manufacturing Company, Chicago; Black Diamond Boring Machine Company, Monongah, Pa.

Carnegie Steel Company, Pittsburgh; Climax Railway Supply Company, Chicago; Consolidated Car Fender Company, Providence, R. I.; Crane & Company, Chicago; Cincinnati Car Company, Cincinnati, O.

Duntley Manufacturing Company, Chicago; Duff Manufacturing Company, Northside, Pittsburgh; Electric Renovator Manufacturing Company, Pittsburgh; Electric Railway Improvement Company, Cleveland; Electric Service Supplies Company, Chicago; Electric Railway Equipment Company, Cincinnati. Forsyth Steel Company, Pittsburgh.

General Electric Company, Schenectady, N. Y.; Gulick-Henderson Company, Pittsburgh; Griffin Wheel Company, Chicago; Galena Signal Oil Company, Franklin, Pa.

Jewett Car Company, Newark, O.; Jones & Laughlin Steel Company, Pittsburgh.

Kerite Insulated Wire & Cable Company, New York City.

Lorain Steel Company, Philadelphia. McConway-Torley Company, Pittsburgh.

National Brake Company, Buffalo, N. Y.; National Brake & Electric Company, Milwaukee; Nichols Street Car Signal Company, Omaha; National Carbon Company, Cleveland; Nachod Signal Company, Philadelphia.

Ohio Brass Company, Mansfield, O.

Pay-As-You-Enter Car Company, New York; Pennsylvania Steel Company, Philadelphia; Peter Smith Heater Company, Detroit.

Rail Joint Company, New York City; John A. Roeblings Sons Company, Chicago.

St. Louis Malleable Castings Company, St. Louis; Standard Steel Works Company, Philadelphia; Speer Carbon Company, St. Mary's, Pa.; Sterling Varnish Company, Pittsburgh; Standard Brake Shoe Company, Chicago; Standard Motor Truck Company, Pittsburgh.

Tool Steel Gear & Pinion Company, Cincinnati; Taylor Electric Truck Company, Troy, N. Y.; Trolley Supply Company, Canton, O.

Under Feed Stoker Company, Chicago.

Westinghouse Electric & Manufacturing Company, East Pittsburgh; Whitmore Manufacturing Company, Cleveland; Western Electric Company, New York City; William Wharton, Jr., & Company, Philadelphia; Wagner Electric Manufacturing Company, St. Louis, Mo.; Wheel Truing Brake Shoe Company, Detroit.

Corporations to Which Charters Have Been Granted Recently

PENNSYLVANIA.

Cann Coal Company; \$10,000. Treasurer: John G. Cann, Stoneboro, Pa. Directors: O. D. Bleakley, Franklin, Pa.; John G. Cann, Le Roi J. Cann, George McIntire, Robert P. Cann, all of Stoneboro, Pa.

Emaus Foundry & Machine Company, \$5,000. Treasurer: Milton Frey, Emaus, Pa. Directors: John H. Angeney, Allentown, Pa.; Milton Frey, Welsey J. Muth, Emaus, Pa.

Murray Safety Wheel & Axle Company, \$5,000. Treasurer: Frank P. Murray, 442 Atlantic avenue, McKeesport, Pa. Directors: A. H. McClurg, Glassport, Pa.; James E. Murray, Thomas Murray, Frank P. Murray, Bruce Clarke, all of McKeesport, Pa.

McKenney Iron & Steel Company, \$5,000. Treasurer: C. M. McKenney, Twenty-eighth and Smallman streets, Pittsburgh. Directors: C. M. McKenney, W. G. McKenney, Charles A. Locke, all of Pittsburgh.

Victor Tool Company, increased capital from \$15,000 to \$100,000.

NEW YORK.

Automatic Electric Igniter Company, New York; manufacture gas and electric light fixtures; capital \$40,000. Incorporators: Nicolo Candelora, No. 519 East Thirteenth street; Eugene De Feo, No. 362 Broome street; Vincenzo Blasio, No. 367 Broome street, all of New York.

The Hydraulic Mining Cartridge Company, New York; mines, mining, etc.; capital \$10,000. Incorporators: Orlo S. Knepper, No. 42 Broadway; George A. Burkhard, No. 154 Nassau street; Hattie Danhauser, No. 331 West One Hundred and Seventy-ninth street, New York.

New York Metal Selling Company, increased capital from \$100,000 to \$250,000.

Hudson Valley Telegraph Company, of New York, to operate telegraph and telephone lines through the State, northward to Canada and through the Eastern States, Pennsylvania and New Jersey. James M. Ryan, P. F. Crowe and Edward J. Kelly, all of New York; capital \$25,000.

Diamond Electric Company, Bing-

hampton, N. Y.; manufacturing electric devices and appliances; capital \$100,000. Incorporators: Sigmund J. Hirschmann; Jacob Schwab; Harrison C. Price; all of Binghamton, N. Y.

Miller Motor Company, New York; manufacturing Miller Rotary Engines; capital \$20,000. Incorporators: Charles Miller, No. 132 East Fifty-seventh street; Lawrence H. Cummings, No. 183 Third avenue; George W. Schaefer, No. 216 East Seventeenth street; all of New York city.

The Orvo Manufacturing Company, New York, manufacture embossing machines and dies; capital \$50,000. Incorporators: C. I. McLaughlin, No. 71 Luane street; Louis H. Orr and Willis E. Frost, No. 119 West Twenty-fifth street, New York.

Mayer Slotkin Manufacturing Company; manufacture cars, carriages, wagons, boats, motors, engines, machinery, etc.; capital \$50,000. Incorporators: Samuel Slotkin, No. 427 Second street; Samuel Goldstein, No. 26 Lewis street; Jacob Burnstone, No. 236 Madison street, New York.

OHIO.

Charles Schiear Motor Car Company, Cincinnati; Charles Schiear, C. K. Dickman, R. M. Scott, J. L. Hudle, Charles Broadwell; capital \$25,000.

Peerless Scrubbing Machine Company, Cleveland; John A. Hewitt, M. V. Emerman, Edwin C. Fleischmann, Louis A. Nolin, W. L. Ulmer; capital \$10,000.

Elyria Gas Power Company, Elyria; C. O. Hamilton, J. L. Kiser, C. M. Blanchard, J. A. Gahagan, F. M. Sterns; capital \$100,000.

Dayton Auto Top & Accessory Company, Dayton; I. B. Kline, J. P. Jackson, C. T. Cutlip, Jeremiah C. Chase, D. G. Harman; capital, \$10,000.

Hobart Electric Manufacturing Company, Troy; increase from \$200,000 to \$400,000.

Sebastian Lathe Company, Benjamin; C. E. Sebastian, Jacob May, M. M. May, F. E. Webner; capital \$100,000.

American Farm Machinery Company, Springfield; Read L. Bell, C. M. Root, B. F. Howell, W. N. Whitley, W. N. Whitley, W. N. Whitley, Jr.; capital \$50,000.

INDIANA.

Indiana Auto Parts Company, Marion; \$75,000; manufacturers; G. R. Stewart, Richard Ruddell, H. D. Reasoner, F. C. Stephenson and J. D. K. Kennedy.

Ideal Auto Starter Company, Indianapolis; \$25,000; to manufacture auto parts; W. K. Bellis, S. P. Woodward, A. L. Smith, R. T. Snapp and N. L. Woodward.

Bee Ridge Block Coal Company, Brazil; \$10,000; producers; J. F. Robertson, A. T. Spears, W. G. Spears and Lloyd Robertson.

Precise Company, Indianapolis; \$10,000; to manufacture machinery; Angel Afanador, J. E. Parker, O. W. Morgan and H. L. Lobach.

Muncie Wheel & Jobbing Company, Muncie; notice of change of name to Muncie Wheel Company.

WEST VIRGINIA.

Virginian Coal & Coke Company, Bluefield; \$100,000. E. A. Williams, W. R. Collie, W. E. Goalsby, F. U. Fisher, and M. T. Williams, all of Bluefield.

Louisa Coal Company, Huntington; \$20,000; E. M. Watts, T. J. Bryan, A. E. Bush, M. Lee and Z. T. Vinson, all of Huntington.

Saxman Coal & Coke Company, Philadelphia, with works in Nicholas and Greenbrier counties, W. Va.; \$200,000; Henry L. Shattuck, William H. Best and John B. Pierce, of Boston, Mass.; A. R. Groustein, of Cambridge, Mass. and R. H. Overson, of Brookline, Mass.

Pocahontas Connecting Railway Company, of Charleston, to build and operate a railroad from Cirtsville to Jarreds Valley, Raleigh county, W. Va.; \$200,000; John G. Reading and Robert F. Allen, of Williamsport, Pa.; O. P. Fitzgerald, Jr., V. L. Black and George S. Couch, Jr., of Charleston.

CANADA.

Canadian Graving Dock & Shipbuilding Company; capital \$2,000,000; head office, Montreal. M. J. O'Brien, Renfrew, Ont., director.

The King Edward Exploration, Smelting, Refining & Milling Company, of Cape Breton; capital stock \$500,000;

head office, North Sydney; Henry Epps, North Sydney, director.

Stepney Motor Wheel of Canada; capital \$475,000; head office, Toronto. Gordon L. Smith solicitor.

Standard Elevator Company; capital \$250,000; head office, Winnipeg. W. K. Chandler solicitor.

H. Walters & Sons; capital \$350,000; head office, Hull, Que.; will manufacture axes and other lumbermen's tools. James G. Walters, Ottawa, director.

NEW CONSTRUCTION.

Waterville, N. Y. — Plans of Griggs & Hunt, of Waterbury, are being figured for the two factory buildings to be erected in Waterville, for the Berbecker & Rowland Manufacturing Company. One building will be 40x80 feet, three stories and basement, and the other 35x105 feet, one-story high. Both will be of brick, with bluestone trim and tar and gravel roofing.

Indianapolis, Ind. — The National Motor Vehicle Company will soon receive bids for the construction of a factory building, 154x200 feet, which will be partly two stories on East Twenty-second street. Estimated cost, \$25,000.

Sapulpa, Okla. — Sapulpa Steel Works will be organized with a capital stock of \$500,000 by S. R. Wells, of Indianapolis, and others, to build a plant here for manufacturing merchant bar iron from scrap iron.

Hastings, Neb. — The Hastings Foundry & Iron Works will erect a foundry building, 60x100 feet; steel structural building; storeroom and office, 40x100 feet, and pattern shop, 40x100 feet.

Superior, Wis. — The United States Gypsum Company will rebuild its plant, which will be 160x64 feet, and built of corrugated iron or concrete blocks.

Newark, N. J. — Plans are in hands of contractors for estimates on manufacturing plant to be erected for J. H. Ladew & Company, leather manufacturers, of Manhattan. The plant will be constructed along the Passaic river, adjoining the Plank road, and when completed will represent an outlay of about \$500,000. There will be five separate brick structures, as follows: Manufacturing buildings, four stories, 70x800; auxiliary building, one-story, 50x80; storage building, 50x150; boiler and engine house, one-story, 60x100, and limehouse, one-story, 20x30. It is expected that work on the foundations will be begun this month.

Holyoke, Mass. — Samuel M. Green, architect, of Springfield, has been commissioned to prepare plans for a manufacturing building for the Holyoke Water Power Company. Complete details will be given later.

Plainville, Conn. — Plans are completed and estimates will be received at once for an addition to the factory of the Trumbull Electric Manufacturing Company, in Plainville. Brick, 50x50 feet, four-stories. Max J. Unkelbach is the architect, Delbert K. Perry, associate.

Springfield, O. — Citizens will vote in November on \$100,000 bond issue for new city lighting plant. City now pays private company \$50,000 a year for street lighting.

Columbus, O. — Ralston Steel Car Com-

pany is preparing plans for \$60,000 addition to forging department; extension already financed; proposals to be asked shortly.

Columbus, O. — Columbus Bolt Works is building a large addition to its warehouse.

Menominee, Mich. — Cash paid in on \$60,000 capitalization of newly organized Menominee Electric Manufacturing Company, which has bought out Dudley Tool Company. Factory to be built immediately. Company has acquired rights on German patents on high-grade small tools and automobile parts. Henry Tideman, general manager.

Cincinnati, O. — Couch Brothers Manufacturing Company, manufacturers of harness and saddlery supplies, of Atlanta, Ga., purchased a two-acre site on Western avenue and will erect two-story factory building. Plant to be in operation in 60 days, and will run as a branch of Atlanta factory.

Huntington, W. Va. — Monongah Glass Company is preparing plans for \$65,000 addition to its plant.

Harrisburg, Pa. — Nuss Manufacturing Company, musical instruments, purchased site for new factory building, to be 25x100, three stories. Plans being prepared. New machinery equipment to be purchased. C. W. Nuss, Harrisburg, president.

Bucyrus, O. — Estimates are being received on the erection of a 1-story brick power house addition, for the Bucyrus Gas & Electric Company. Plans by Architect Harlan Jones, of Mansfield.

Portsmouth, O. — Architects A. B. Alger & Sons, Turley block, are taking bids on constructing a 3-story brick manufacturing building, for the Mitchell Manufacturing Company, to cost \$30,000.

Wooster, O. — Contractor W. H. Long has started the erection of a brick manufacturing plant addition, for the Gertenslager Company, from private plans.

Miamisburg, O. — Foundations are in for a brick factory addition, to be erected for J. C. Groendyke, 140 Dearborn street, Chicago, from plans drawn by Architect W. Lawrence Jackle, of Dayton.

Wheeling, W. Va. — The Fort Pitt Bridge Company, of Canonsburg, Pa., will soon start the erection of a one-story steel factory building, for the Hazel-Atlas Glass Company, to cost \$5,000.

Columbus, O. — The Dean & Barry Paint Company is having plans prepared for a three-story factory building, to be erected on Randolph and Park streets.

We "consume" much more than we actually eat or drink, says an exchange. For every man, woman and child of the 90 millions in the United States there is produced each week: Three-quarters of a pound of wire, more than three-quarters of a pound of rails, half a pound of structural shapes, three-quarters of a pound of plates, one-third of a pound of sheets, three-quarters of a square foot of tinplate, two and a half pounds of bars, hoops, etc., four pounds of iron castings. These and other finished iron and steel products make a total of 12 or 13 pounds each week per head.

An Elaborate Wood-Pipe Line System in Somerset County

In a letter addressed to the Pittsburgh representative of the A. Wycoff & Son Company, of Elmira, N. Y., manufacturers of wood pipe, H. G. Bonner, writes thus of the wood-pipe line system of conveying water for the Windber Water & Power Company in Somerset county, Pa.



It may be added here that this is one of the most extensive pipe-line systems for the conveyance of water to a mining operation and for associate uses in the United States, and that wood pipe was selected only after the most thorough investigation of the merits, lasting qualities and repair costs of wood pipe in contrast with wrought iron or steel, cast-iron or terra cotta pipes. In his communication Mr. Bonner says:

"Work was started on our pipe line from Clear Shade creek to Windber on August 11, 1908, and the last pipe was laid early in January, 1909. The actual working time was three months and 13 days, as we were delayed at various times by non-arrival of pipe. This delay totaled a little more than a month. The delivery of water commenced about the middle of January of this year.

"The improvement in our water supply, both as to quality and quantity, has been very marked. Our former source of supply had become contaminated by sulphur from mining operations farther up the stream, and was also entirely inadequate for present demands. We now have an abundant supply of pure water, with sufficient head to produce a static pressure of 70 pounds at the highest point in the town. The improvement in the life of boiler tubes at the various

power plants using water from this system has also been very marked.

"The total length of the wood-pipe line from the source of supply on Clear Shade creek to South Twenty-second street, Windber, is approximately 42,000 feet. At the latter point the wood-line connects to a 20-inch cast-iron main, approximately 3,200 feet long. This main is laid under the streets, and connects the wood-line with the various distribution mains previously laid. The upper half of the line lies in a very rough country, the entire surface being covered by sand-rock boulders. In some places it was necessary to haul earth from other points on the work to fill in around the pipe. The country over which the lower half of the line is laid is not so rocky, but nearly seven thou-



sand feet of this section of the line is laid in swampy ground. The accompanying photographs will give some idea of the different conditions. The size of the pipe varies from 24-inch to 16-inch, depending on the hydraulic grade to which it is laid.

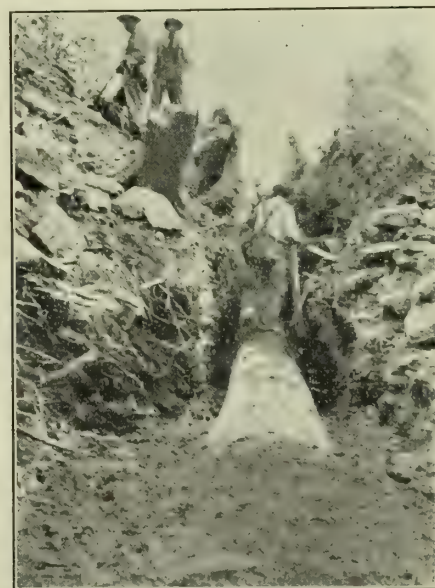
"The pipe line has proved to be remarkably free from leaks. A few small leaks which showed up in the wood-pipe on filling the line with water were entirely stopped by the swelling of the pipe when wet and the introduction of bran into the intake end of the line. Our trouble with leakage has been at the joints between the wood-pipe and the cast-iron fittings at various points. We have had no other leakage since the line was put in operation, and attribute this to the care exercised by our engineer,

R. M. Mullen, and his inspectors. We did not reject any pipe with sound knots, and, as we have so far had no trouble with leakage we feel that knots of this kind are not objectionable.

"Under conditions similar to ours, wood pipe has a decided advantage over cast-iron, both in first-cost and time required for construction. With cast-iron, however, there is no question as to the amount of fill that it is safe to place on pipe, but we have not as yet determined the limit of fill for wood pipe. We will not fill the deep cuts on our line until we have determined just what the pipe will safely stand. It is also probable that the chances of rupture of the wood pipe would be decreased by fastening steel winding to the wood at frequent intervals instead of merely fastening it at the ends of the pipes.

"The entire work was in charge of our engineer, R. M. Mullen, and he has succeeded in laying out a very satisfactory line under rather adverse conditions."

It is stated that Wycoff wood pipe was chosen after a careful investigation of the merits of various wood pipes. The Wycoff machine-made wood stave-pipe,



manufactured out of Canadian white pine, shell $1\frac{1}{8}$ inches thick and wound with No. 18 gage 2-inch wide steel hoop, was then selected.

The joint is of the socket-and-tenon style, with 4-inch lap. After the pipe is complete, it is coated with an imperishable asphaltum cement, which absolutely prevents acid in the soil from getting at the steel hoops.

Wanted, For Sale, Bargains, Etc., in Brief.

POSITIONS WANTED.

Drawings—Structural and mechanical designs and details. Moderate prices. Address Box 126 Industrial World.

Civil Engineer, 20 Years Experience, desires position as locating or resident engineer; also familiar with drainage work; A1 reference; have instruments. Address Box 43, Amboy, Ill.

Foundry Foremen and Others wanted to increase their earning capacity 25 to 50 per cent, by taking a course in the mixing of irons with the Milwaukee Correspondence Schools, Goldsmith Bldg., Milwaukee, Wis.

A Position as Manager or Superintendent; age 29; a graduate Massachusetts Institute of Technology; at present in charge of a boiler plant with an annual output of nearly 100,000,000 K. W. H.; reasons for desiring a change; 12 hours per day, 365 per year. Address Box 4, Darlington, Mo.

WANTED.

Situation—An experienced accountant, correspondent and general office man, accustomed to handling men and accounts, desires position where energy and attention to details will merit recognition. Address Postoffice Box 194, Northside, Pittsburgh.

Wanted—Attention, manufacturers. An old-established rolling mill, whose output is high grade bar iron, and black and galvanized sheets, and having ample ground in Pittsburgh district, would be interested in having located on their ground manufacturing adjuncts that use above materials. Parties engaged in manufacture of trade articles from above materials, who contemplate change of location, or engaging in new enterprises, can address office of the Industrial World, Pittsburgh, Pa., giving full particulars as to tonnage used; space desired, etc.

Wanted — A second-hand 15 or 16 h. p. stationary gas engine. Address Norwood Machine Company, Cincinnati, O.

Wanted — Manufacturers wanted to build cold rolled shafting machinery on royalty basis, under United States patent No. 895,364, dated August 4, 1908, described in the Industrial World December 28, 1908. Address John S. Griffin, Roslyn, Washington.

SEALED PROPOSALS.

Machines for Tabulating Agricultural Statistics. — The Director of the Census is considering various types of machines with a view to determining the one best adapted for tabulating the agricultural statistics of the Thirteenth Census. Any one possessing a machine adapted for this purpose is invited to present the

same for test in practical operation at the Bureau of the Census, Washington, D. C., on or before July 31, 1909. For further information address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

Sealed Proposals will be received at the office of the Director of the Census, Washington, D. C., until 2 o'clock p. m., August 9, 1909, and then publicly opened for furnishing all the labor, materials, and work necessary for the construction in lots of 60, 75, 100, or 125 tabulating machines and delivering the same complete, free of all charges for transportation, at the Census Building, Washington, D. C. right is reserved to accept or reject all bids in whole or part, to strike out any item or items in the specifications, and to waive any defects. For specifications, blueprint drawings, blank proposals, and full information, address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

FACTORIES WANTED.

Factories Wanted — Grafton, W. Va., will give to manufacturers, a free site on railroad siding, with shipping facilities in all directions, five-cent gas, and an inexhaustible supply of soft water and coal. For information, address Secretary, Grafton Board of Trade.

MANUFACTURING SITES.

Manufacturing Sites — Free, on railroad and Ohio river and street car line; cheap gas; cash bonus given to good mills, factories and shops. Special facilities for sheet and tin mills. Address Paden City Land Company, 45 South Twentieth street, Pittsburgh, Pa.

FOR SALE.

For Sale—Several power generators with their engines and switchboards, lighting generators, hoisting engines, mine wagons, air compressors, feed water heater, steel head frames and bins. All this apparatus brand new at manufacturers' shops. Owing to contracts for this equipment being placed 18 months ago, can sell same at lower prices than it can be purchased for today and can also give immediate delivery. Address Box 200, Industrial World, Pittsburgh, Pa.

GAS ENGINE AND GENERATOR FOR SALE.

One Westinghouse 13"x14" 3-cylinder gas engine, with usual fittings and dynamo igniting spark coil, connected by patented flexible insulated coupling to one General Electric Company direct current generator, type M. P., 6 piles, 100 K. W., 270 R. P. M., 250 volts, 400 amperes, guaranteed to stand 50 per cent overload for two hours and 100 per cent momentarily.

All in first class condition. Used only as spare. We are replacing with 500

horsepower gas engine of our own make, and 400 K. W. generator. For price and photograph address Mesta Machine Company, Pittsburgh, Pa.

For Sale — One second-hand 8x9" Chuse engine, direct connected to 15 k. w. Triumph generator; good condition. Electric Machinery & Specialty Company, 204 Franklin avenue, St. Louis, Mo.

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CANADIAN CHROME ORE: CHRONOLOGICAL OF CHROME INDUSTRY.

The Canadian Department of Mines has just published a very ambitious "Report on the Chrome Iron Ore Deposits of the Province of Quebec," prepared by Fritz Crikel, M. E. The report is more than review of the development of the ore deposits of Quebec, however, containing, in its various chapters, a very comprehensive story of the chrome industry, and the development of the uses of the mineral. In introducing his volume, the author says:

The rapid progress in the production of chrome iron ore in Canada, since 1902—as seen from the statistics published—seems to indicate that the work of mining and refining this ore is destined to become of considerable importance among the industries of the Dominion. Up to the year 1902 there was no steady production, and the chrome iron ore deposits were only superficially tested and operated; while their peculiar occurrence added so materially to the difficulties in mining, and to the cost of preparing it for the market, that there was no reasonable margin of profit.

To-day we find entirely different conditions. The deposits once discovered on the surface have, in the majority of cases, been followed toward depth; more rational and practical mining methods have been adopted, while the method of concentration of the mineral has been brought to such perfection that few improvements in that respect are to be anticipated.

In the present report an effort has been made to summarize all practical information now available regarding this mineral, and it is hoped that the same will be of interest not only to those engaged in the mining and exploitation of chrome iron ore deposits, but also to those interested in this mineral or its products commercially. The literature on the subject is so meager, and so scattered through technical journals, and government reports, that it has been very difficult to study the industry in all its phases. The writer proposes to discuss in this report the geological occurrence of the mineral, both in Canada and foreign countries; the shape and structure of the ore bodies; their manner of development; the composition of the ores and their properties; the various methods of concentrating, and finally the application of chromium, its alloys and compounds.

Of the status of the Canadian industry, Mr. Crickel says:

The principal market for Canadian chromite is the United States; only a very limited quantity being consumed in Canada. No duty is paid on chrome iron ore sent to the United States; but there is a tariff on all compounds, or articles manufactured therefrom. Most of the crude ore mined is sold for furnace linings, to steel works; the occasionally high amount of silica contained in the mineral—sometimes as much as 10 per cent—being no more a barrier to its application. A maximum of 4 per cent of silica some five years ago was all that was accepted, but to-day ore containing as high as 8 per cent of silica is readily bought for that purpose.

The greater part of the concentrates

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is used in the chemical industry; mostly for the manufacture of bichromates. The prices for chrome iron ore have fallen steadily for the last 15 years. In 1895 as high as \$20 and \$21 per gross ton f. o. b. station, was paid. In 1899 the price dropped to \$17 and \$18, and to-day it is \$14 and \$15, with an ascending scale of 50 cents per unit.

* * * * Another difficulty which seriously handicapped the progress of this industry was the question of finding a market. There was at one time a prejudice on the part of users of chromite in the United States, against Canadian chrome iron ores as not being so well adapted to certain applications as those coming from Asia Minor; but all this has now disappeared, and the Canadian chrome iron ore holds its own in the many applications for which the mineral is adapted. At the present time there are in operation 75 stamps, with a total approximate capacity of 150 tons of milling rock per day. Three companies only are at present producing, that is, the Black Lake Chrome and Asbestos Company, at Black lake; the Canadian Chrome Company, near Thetford, and the American Chrome Company, operating around Black lake. In the summer season about 150 men are employed.

As to the future possibilities of the productive chromite fields of Canada, located in the Eastern townships, there is no doubt that the future outlook for a production of a large tonnage is very bright, and if Canada should ever be called upon to furnish four or five times the quantity of ore produced to-day, the writer is of opinion that the deposits at present under development, as well as those lying idle but which were worked some years ago, can deliver this quantity for years to come.

In conclusion, Mr. Cirkel gives this succinct "Chronology of the Chrome Industry":

1762—First attention drawn to a new mineral from Siberia, now called crocoite (chromate of lead, Dana).

1786—Analyses of this mineral, by Lehman, but no discovery of chromium.

1789—Analyses of this mineral by Macquart and Vauquelin. Suspicion as to presence of foreign element expressed.

1797—Discovery of the element chromium by Vauquelin in crocoite.

1798—First discovery of chrome iron ore in the Urals by Soymonof.

1810-15—Successful manufacture of chrome salts.

1820—Application of chrome salts to dyeing turkey red, by Koechlin. Application to dyeing of textile fabrics and to decoration of porcelain.

1823—Discovery of chrome iron ore in the Bare hills, Baltimore county, Maryland, U. S. A., by Isaac Tyson.

1825—First shipment of American chrome iron ore to England.

1827—Discovery of large chrome iron ore deposits in Harford county, Maryland, U. S. A.

1828—Discovery of the famous Wood Farm deposit, Lancaster county, Pennsylvania, U. S. A. The output up to 1804 amounted to 95,000 tons of ore.

1828-30—First factory for the manufacture of chromic acid salts in Europe, by J. and T. White, in Glasgow, Scotland.

1845—First factory for the manufacture of chromic acid salts in America, by Mr. Tyson, in Baltimore.

1847—First reference of chromic iron

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ore in Bolton, Eastern townships of the Province of Quebec, in the reports of Geological Survey of Canada for 1847-48.

1848—Discovery of large deposits of chrome iron ore near Brusa, Asia Minor (57 miles east from Constantinople), by Professor I. Lawrence Smith.

1850—First large exportation of chrome iron ore from Brusa, Asia Minor, affecting the world's market.

1853—Discovery of chromite in New Zealand.

1856—First application of chromium compounds to tanning leather.

1858—Discovery of chromite in Mount Albert, Gaspé peninsula, Canada, by members of the Geological Survey.

1863—First exploration of chrome iron ore deposits in the neighborhood of Lake Nicolet, in the Eastern townships, Province of Quebec, Canada.

1869—Discovery of chrome iron ore deposits in the mountains of Santa Lucia, in the northwestern portion of the county of San Luis Obispo, California.

1870—First discovery of chromite in Del Norte, Sonoma, and Placer counties, California.

1874—Discovery of chrome iron ore in New Caledonia.

1881—First manufacture of chrome-steel armor plate in France.

1882—Discovery of chrome iron ore in Cundagai, New South Wales, Australia. First attempt to mine chrome iron ore in New South Wales, in the Bowling Alley Point deposits, near Peel river.

1885—First manufacture of chrome steel in the United States.

1886—Mining of chrome iron ore in the townships of Wolfestown, Leeds, and Thetford, Province of Quebec.

1891—First nickel chrome steel made in France.

1894—Discovery of chrome iron ore near Black lake, in the township of Ireland, especially in the township of Coleraine, Province of Quebec. Discovery of chromite at Bluff-Head, Port au Port by, Newfoundland.

1898—First chrome iron ore concentration on the shores of Black lake, by the Coleraine Mining Company.

1901—First successful stamp mill erected by Mr. Whitney, on lot 9, range xiii, Coleraine, Quebec, belonging to the American Chrome Company, of Boston.

COST OF REINFORCED CONCRETE BUILDINGS.

Among the interesting papers read before the recent meeting of the National Association of Cement Users was one on the above subject by Emile G. Perrot, Philadelphia, Pa., and from which we take the following extracts:

The use of plain concrete for footings, foundations and as a substitute for massive masonry wall construction has come to be generally accepted by the building world of to-day. Even the most skeptical as to its use for columns and beams do not hesitate to use concrete in the above manner. As the constitutional infirmities of plain concrete became more evident and its use consequently restricted, means for overcoming these weaknesses by reinforcing the material with iron or steel rods at once opened up the field of application of concrete, so that



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to-day entire structures from footing to top of cornice or parapet are constructed solely of this material.

Twenty-five years ago the idea of making buildings of the factory type fireproof was uncommon; almost any sort of structure was deemed fit to use for manufacturing purposes. As the ascendancy of the United States in the manufacturing world became great and we commenced to lead in the manufacture of the world's products, architects and engineers at once saw a field for their labors that had heretofore been left to the caprice of untrained minds, it being the exception for an architect or engineer to be consulted in the designing of a strictly factory building. To-day, however, thanks to the persistence of the insurance companies on higher standards, the design of almost all manufacturing buildings is attended with much study, and they are usually built under the supervision of a competent architect or engineer. This change in methods has led to a much higher standard of building, and with the advent of reinforced concrete has come the commencement of a period when fireproof factory buildings are to be the rule instead of the exception.

We all know how the so-called "slow-burning" type of mill construction supplanted the joist constructed building a few years back; how the building laws of large cities classify the buildings into first, second, third class, etc., according to their degree of fireproofness; how insurance companies are lowering the premiums on fireproof buildings; in fact, the tendency to-day is toward a better grade of buildings.

We hear to-day a great deal concerning the scarcity of lumber; perhaps it is a good thing that lumber is becoming more expensive and the price almost prohibitive, for then we turn our thoughts to a substitute, and in doing so improve upon the methods that have been in vogue. The optimist's reply to the lumber question is, "Use reinforced concrete or concrete lumber; build so as not to burn, make your work permanent; reduce the cost of maintenance on your building, get lower insurance rates, or, better still, eliminate insurance." What is the need of insurance when the amount of inflammable material is reduced to a minimum? The cost of a building is very little more, and the interest on the additional investment is usually less than the insurance premium.

As to the increased cost of reinforced concrete over slow-burning mill construction, everything else being equal, it varies from 10 to 20 per cent., according to the heaviness of the construction and the size of the building, also the number of times the forms can be reused.

Some buildings have been erected in

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which the floor loads were such as to preclude the use of heavy yellow pine timbers, as the sizes required would have been larger than it is practicable to obtain. On the other hand, the use of steel beam girders fireproofed would have added to the cost sufficiently to make the composite construction equal the cost of a pure reinforced concrete building.

In addition to the saving on insurance by having a fireproof reinforced concrete building, there must be taken into consideration the effect of wear and tear on the building if of the ordinary type; this is especially true where vibrating machinery is used, such as an instance of a leather factory, where the glazing machines are situated on the third floor. These machines were formerly in an upper story of a brick and joint constructed building, and produced so much vibration as to cause alarm to the owners, as well as making necessary constant attention to the shafting and machinery in the way of adjustment and consequently adding considerably to the running expense. In their new location the vibration is absent and the cost of upkeep on machinery and shafting is reduced so much as to amount to very little compared to the cost in the former building.

In comparing the cost of reinforced concrete construction with steel construction fireproofed, we find that concrete construction is cheaper than the steel construction fireproofed. Actual bids on the two types of construction for the same buildings obtained reveal some interesting facts.

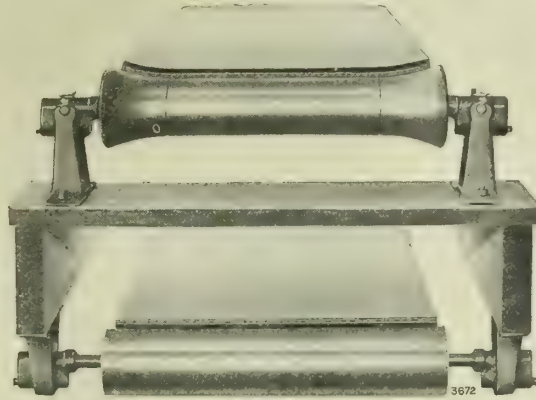
For the Ketterlinus building in Philadelphia, which is an eight-story and basement building, reinforced concrete was decidedly cheaper by about 20 per cent, and made a much stiffer building to resist the shocks of the heavy lithographic presses in the fifth and sixth stories of the building. This building has heavy concrete wall piers on the street fronts, veneered with four inches of mottled brick secured with copper ties. There are heavy reinforced concrete brackets connecting columns with girders and beams, and the floor system consists of deep girders and beams spaced about four feet six inches center to center for beams, the slab being four inches thick. The column footings are reinforced concrete, but the interior columns for five stories are of structural steel fireproofed.

Another notable instance of the saving effected by the use of reinforced concrete is the Boyertown building, Philadelphia. The owners saved about \$60,000 by the skillful use of reinforced concrete for the entire construction, representing a saving of about 30 per cent. It is 10 stories and basement, built of a concrete cage having the front veneered with granite in the first story and brick and terra cotta in the upper stories.

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The side walls are adjacent to party lines, having simple reinforced concrete columns spaced about every eight feet six inch centers to carry the floors and roof. Those in the basement were set back from the party lines sufficiently far to build a continuous reinforced concrete footing within the property lines of the building, thus compelling the use of heavy reinforced concrete cantilever girders at the first floor level to carry the wall columns above; the load on the end of the cantilevers is 385,000 pounds, and the leverage 29 inches. The rear wall of the building is carried on cantilevers at each floor, due to a recess in the first story of the building for a shipping department. These cantilevers are seven feet long, but while they are much longer than those carrying the side walls, they carry less load, since there are cantilevers at each floor on the rear, while on the sides they exist only at the first floor level and carry nine floors and a roof. These are the heaviest concrete cantilevers ever built in Philadelphia, as far as I know. The reinforcement used throughout is cold twisted steel.

A FORECAST FROM OVER-SEA.

America has entered upon another period of expansion, and nothing is lacking to ensure a growth in the trade and wealth of the country to yet unattained proportions, says the London "Statist." Confidence, which was severely shaken by the crisis of 1907, has been completely restored, and the ability of the country so easily to get through the period of readjustment has contributed, and will continue to contribute, to the expansion of trade which is now taking place. Nothing can prevent the rapid expansion of a country endowed with so great a store of natural wealth and inhabited by a people so enterprising and so gifted. The really marvelous progress of the United States in the past has resulted as much from the character of the American people as from the great natural wealth of the country. By their energy, but more especially by their skill, the people have gathered the natural riches of their country with a minimum of expenditure of labor and of capital. Continued success in securing a vast expansion of their wealth production, actually and in proportion to the labor and capital employed is not in question. This is no mere academic or rhetorical statement. Its practical bearing is of the greatest importance, as an example will indicate.

In early days, railways in the United States were constructed in the lightest and most inexpensive manner possible in order to secure the greatest amount of traffic from the smallest expenditure of capital. At a later stage it became obvious that strongly built railways were

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needed to convey a great traffic at a minimum of expenditure, and the railway companies proceeded to reduce gradients, cut out curves, build strong bridges, lay down heavy rails and do everything that was necessary to enable the traffic to be carried in the most wholesale and economical manner possible. The result of these methods was to permit a vast quantity of traffic to be dealt with at a comparatively small expenditure of capital and of labor. Everything is now in readiness for the railways of the United States to deal with their traffic with unexampled economy. Most of the trunk-line railways are capable of bearing trains of unexampled weight and length. Locomotives have been acquired for the purpose of hauling vast burdens, and the number of low-capacity freight cars is being rapidly reduced. Thus goods will be conveyed at minimum cost, and lumber, agricultural products and other traffic which could not be moved if high freight rates had to be charged will be conveyed from one side of the United States to the other at infinitesimal cost. What is taking place in the railway industry is going on in all other industries. Production is conducted on a greater scale and in a more scientific manner each year, with the result that the wealth produced is growing at a much greater rate than either population or capital. Hence the quantity of wealth available for consumption and for accumulation per head of population is rapidly increasing. ***

Only after there is no fresh land to put under cultivation, no new mines to open up, no additional oil wells to tap, no new supplies of lumber to be cut, no further economies of transportation to be made, can there be a diminution in the rate of expansion. America is still many years distant from this position, and when it does arrive still better methods of production, notably of agriculture, will insure the continuance of expansion for an unlimited period.

Practically there is no limit to the possible annual production of minerals, and a vast increase may be looked for as demand grows. Some idea of the potential mineral wealth of the country may be gathered from the rate at which production has increased in the past.

Little needs to be said concerning the probable expansion in American manufactures. Everyone recognizes that the growth of output will probably be as phenomenal in the next decade as it has been in the past 10 years. During the depression following upon the banking crisis, production of manufactured goods was greatly reduced, but already the rate of production has recovered, or nearly recovered, to 1907 levels, and next year all previous records will be surpassed.

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fruits of the expansion, of American production Europe is likely to participate in a much greater degree than since the 80s. The progress of a nation, especially of a young nation with great natural resources, depends largely upon the supplies of new capital it can command.

It is true that new inventions and methods enable capital previously expended to become increasingly efficient; nevertheless, supplies of new capital are essential to the increased efficiency of the old capital. The United States will now have the command of unprecedented supplies of new capital. The savings of the American people have never been nearly as great as they now are, and these savings are likely to be supplemented by large supplies of capital from Europe. In 1907 the wealth produced by America was very great, but it was attended by unlimited consumption, and the expenditure, both of capital and labor, became relatively inefficient. The recent depression has brought matters back to a solid basis. * * * *

In brief, we look for another vast growth of traffic and of gross earnings; for still greater economy in expenditure in the future than in the past; for only a moderate increase in capital in proportion to the growth of traffic, and for a further large expansion in profits and in dividend-paying power.

TIN MINES OF SIAM.

A report on the Anglo-Siamese treaty, which was ratified on July 16, Minister Hamilton King, of Bangkok, states that it will be followed by an advance in business in all lines pertaining to the opening up and development of the Siamese Peninsula:

The construction of the 600 to 700 miles of railway that has been provided for in the treaty will be begun at once, and the preliminary survey is already being pushed. The money therefor will be available as needed, and, by an unexpected combination of circumstances, much of the iron for the road has already been contracted for. This work will probably extend through several years and will be open to competent men of all nationalities. The climate is humid and the heat tropical, but the line runs its entire length along the seacoast, and there is no reason to believe that the white man cannot, with proper care, live here with a fair degree of comfort and safety. The entire management will be under a Siamese official of British nationality, who is well acquainted with the country and the people, as well as with the region through which the line runs, and who has already secured on his staff both British and German engineers.

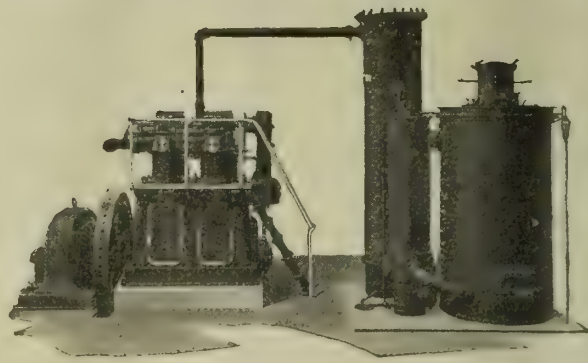
It is understood that supplies of all descriptions for this road will be purchased through open tenders whenever

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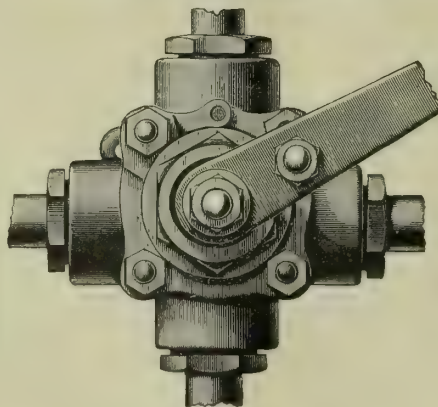
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practical. The first large consignment of rails will be supplied by a Belgian firm.

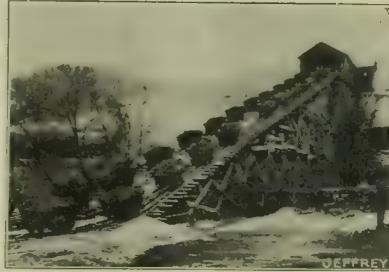
In all these lines of development, perhaps that which is of most practical interest to Americans is the new impulse which will be given to the tin-mining industry in this peninsula. There is an enormous field for the expansion of the tin-mining industry in the territory. Statistics reveal the fact that from this peninsula, with its continuation to the south, come over two-thirds of the total tin output of the world. All the deposits of importance are derived from and lie adjacent to the great line of granitic upheaval which forms the boundary range between Siam and Tennasserim, the backbone of the Malay Peninsula, and which may be traced down to the Dutch islands of Billeton, Banka, and Sengkep. This great line of granite is practically the source of all the vast alluvial deposits of tin which are found in Siam and the British, Dutch, and East Indian possessions. The Siamese territory in the north of this peninsula is probably as rich in tin as either the British or Dutch in the south, and the deposits are disseminated more or less thoroughly throughout the whole of the Siamese portion of the peninsula. As yet the west coast has produced more tin than the east, but recent developments point to the probability that the future holds quite as much in store for those who endeavor to develop the territory on the east coast.

The right of mining concessions, together with the rights of other realty property, will naturally first come to those who first place themselves within the treaty relations which confer such rights. (A paper, prepared by the inspector-general of the department of mines and which gives full information regarding the mines of Siam, transmitted by Minister King, is on file in the Bureau of Manufactures.)

Reduced Tin Output in Malay States.

Vice Consul General G. E. Chamberlain, of Singapore, has submitted statistics to the Bureau of Manufactures at Washington, of the output of the Federated Malay states for the first five months of 1909, which show a decline of 10¾ per cent from the same period of 1908, due to lower prices. The totals are 18,413 tons for 1909, against 20,616 tons to June 1, 1908.

George R. Wood and Harry Randolph have incorporated the Wood-Randolph Company, electrical mining engineers, with office in the Park building, Pittsburgh, Pa. Both have had much experience, having been connected with the General Electric Company, the Pittsburgh Coal Company and other coal companies.



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NEW PATENTS.

Among recent patents, reported for the Industrial World, by Siggers & Siggers, Washington, D. C., are the following:

932,191—Franz Trosiener, of Cologne, Germany, has invented an improved machine for bending pipes. It is claimed to shape pipe coils of various forms in a simple manner. The machine comprises an axle, a first grooved and relatively fixed roller mounted thereon, an arm rotatable on the axle, a second roller, a vise adapted to engage the free end of the pipe to be bent, a carriage, and means for connecting the carriage to the arm.

932,394—A new and useful bar stock feeder for use in turret-lathes, screw-machines, etc., patented by Hobart S. Johnson, of Madison, Wisconsin, and assigned to Gisholt Machine Company, of Madison. It comprises a base piece, a member hinged to the outer end thereof and adapted to be swung into and out of alignment therewith, and a pair of gripping jaws mounted upon the forward end.

932,168—Improved means for rolling sheet-metal cylinders, Major M. Parker, Troy, New York. The invention aims to roll sheet metal cylinders usually made of two sheets brazed together. It comprises a tubular casing for the cylinder formed of longitudinal sections, an expander including a roller for contracting with the inner surface of the cylinder and means for feeding the expander forwardly and simultaneously rotating it.

Other patents granted to August 31, 1909, reported expressly for the Industrial World by J. M. Nesbit, patent attorney, Park building, Pittsburgh, Pa., follow:

Electric-welding machine, Alvin E. Buchenberg, Toledo, Ohio, assignor to the Toledo Electric Welding Company; traveling crane, Edgar E. Brosius, Alliance, Ohio, assignor to the Morgan Engineering Company; dumping apparatus, Charles H. Wright and Harry E. Scott, Cleveland, assignors to the Brown Hoisting Machinery Company; apparatus for bluing metal sheets, Harry E. Sheldon, Pittsburgh; mine car-wheel, Robert J. Gardner, Pittsburgh, assignor to S. Jarvis Adams Company; feed-water purifier, John Wood, Jr., Conshohocken, Pa.; apparatus for handling slag, David T. Croxton, Cleveland, Ohio; enforced-flow elastic-fluid turbine, William L. R. Emmet, Schenectady, N. Y.; gas-producer, Jerome R. George, Worcester, Mass., assignor to Morgan Construction Company, same place; crucible-furnace, Walter S. Rockwell, New York, assignor to W. S. Rockwell Company; mold,



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WRITE FOR THE PRICE

Jacob B. Blaw, Pittsburgh, assignor to Blaw Collapsible Steel Centering Company, Pittsburgh; reversible steam-turbine, William M. Esterling, Detroit, Mich.; furnace-charging apparatus, David Giles, Chattanooga, Tenn., assignor to United States Cast Iron & Pipe Company.

LAYING OF CONCRETE UNDER WATER.

For the new Detroit river tunnel of the Michigan Central Railroad tremies are being employed to deposit the concrete under water. These tremies, operated from a barge carrying the concrete mixing plant, are riveted steel tubes, slightly longer than the deepest part of the river, and discharge the concrete directly into the forms. To exclude water while the first batch is being laid, two or three empty bags are stuffed into the top of the tube and the wet concrete is poured in, forcing the bags down and the water ahead of them, and by continually maintaining the tube full of concrete no river water can enter.

After the concrete begins to emerge from the lower end, the tube is kept several inches under the surface of the mass forming a seal. As the concrete builds up in the forms the tremie tubes are raised in the towers supporting them on the barge. A floater, consisting of a ball a foot in diameter and of slightly greater specific gravity than water, rises with the concrete and indicates through a wire to the operator on the scow when the tremie should be raised. The wet concrete distributes itself from the bottom of the tremie tube in a circle about 10 feet in diameter.

DREW ON THE SULTAN OF TURKEY.

Wall street still is convulsed with laughter, says the "New York Commercial," at a story emanating from Cincinnati relating how a small iron products manufacturer of that city succeeded in drawing upon the Sultan of Turkey for \$5,000 and having the draft honored by the imperial treasurer of that empire. This manufacturer was in the habit of borrowing moderate amounts of money from a prominent bank in Cincinnati whenever he desired, always furnishing ample security in the shape of bonds or mortgages on realty. On the occasion in question, however, he dashed into the bank breathlessly one minute before closing time and informed the loan clerk that he wished to have \$5,000 immediately. As he was an old depositor and client of the institution, the clerk consented to accommodate him without further parley, but merely requested him to sign a note or make a draft upon some reput-

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able person or firm in that city. The manufacturer hastily prepared a draft and handed it to the clerk, who did not even glance at the name against whom the paper was drawn. The incident was forgotten for a fortnight, as the manufacturer deposited adequate security the following day, but it came to light again in a startling manner when the bank received a communication from the Turkish chancellor inclosing a check for \$5,000 and requesting further information as to how the Sultan contracted indebtedness in the United States involving that amount. It then became known that the manufacturer had obtained the loan of \$5,000 from the Cincinnati bank had made his draft upon the Sultan of Turkey as a joke, intending to replace it with security, but had failed to demand the return of his draft, which had been forwarded to Constantinople in the course of the institution's business and had been honored by the new sultan's minister of the treasury without question, except as to how the obligation

had been contracted. Apparently, the former Sultan had been in the habit of making such debts without consulting anyone and the chancellor had become accustomed to paying all bills and drafts against him without much ado. As the result of this incident, the wages in the financial district now advise everyone who is making a draft to draw upon the Sultan of Turkey.

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1900	32,000	0.38%
1901	164,000	1.29%
1902	319,000	1.85%
1903	463,000	2.08%
1904	473,000	1.78%
1905	1,735,000	4.92%
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1907	2,129,000	4.36%
1908	4,535,000	8.89%
1909	*6,000,000	

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AS TO "BELT TROUBLES."

The following item concerning belts and belt drawings is being sent out by the Joseph Dixon Crucible Company, of Jersey City, N. J.:

After a belt has been in use some time, its surface takes on a glaze. This results in losses due to slipping, always accompanied by heating, and draws the natural oils to the surface, causing them to evaporate. This condition further leads to the belt's getting stiff and hard, and lessens the angle of warp (the angle between the extreme points touched and covered by the belt on the pulley).

Without attention belts are almost sure to deteriorate as above described. Their efficiency is increased and their life lengthened according to the treatment they receive. To prevent the formation of surface glaze and the slipping accompanying it, it is the best practice to use a reliable belt dressing. This dressing should be of a nature that will not only offer temporary relief, but that will penetrate through the surface of the belt and replenish the natural oils. This will result in keeping the belt pliable and preserving the original efficiency.

Rosin is very frequently applied to prevent slipping, and this it will do, but at the same time it destroys the life of the belt itself. You get a temporary cure, but greatly shorten the life of the belt—the rosin dries out the belt and makes brittle the leather fibers.

Dixon's Traction Belt Dressing has through long service proved its value in preserving belts at high efficiency. It does not supply a surface stickiness but is absorbed by the belt, thus keeping it in its natural condition, preventing the formation of surface glaze with the attendant slipping, and maintaining the angle of warp at its widest points.

If any readers have belt troubles or wish to insure themselves against these troubles, they should take up this matter of the proper care of belts with the Joseph Dixon Crucible Company.

ELECTRICITY FROM WIND.

The generation of electricity by aeromotors, or "wind turbines," as they call them, is making great progress in England, as shown by an exhibit at the seventieth annual show of the Royal Agricultural Society at Gloucester. The exhibit included a 24-foot turbine on a 60-foot steel tower, driving a variable speed generator with considerable excess storage-battery capacity to provide for calms. Current was supplied for an electric drill, kettles, irons and fans, as well as a butter churn, a cream separator, a circular saw, and a deep-well pump. By division of the storage battery into two parts, it is alleged to be possible to use 50-volt current for light-

ing, the latter permitting the use of metallic-filament lamps.

Dinner to Edison.

Thomas A. Edison was the guest at a dinner in New York, September 2,

tendered him by 250 men who have been associated with him during thirty years. The affair marked the close of the thirteenth Association, composed of men who have been actively engaged in exploiting the lighting inventions of M. Edison.

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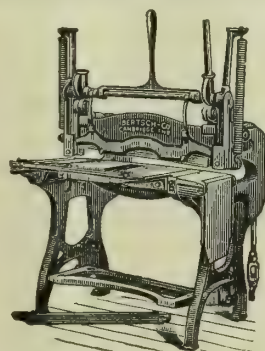
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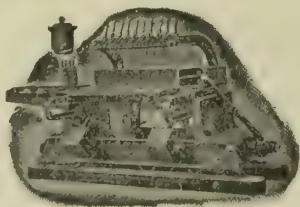
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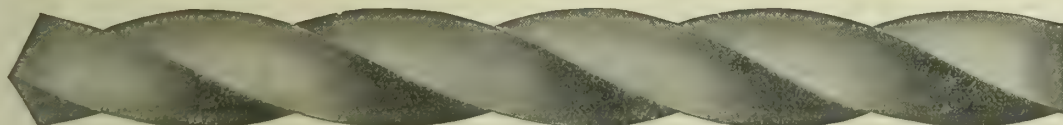
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We manufacture all sizes from $\frac{1}{4}$ " to $1\frac{1}{2}$ " increasing by 16ths, and in lengths up to 60 feet.

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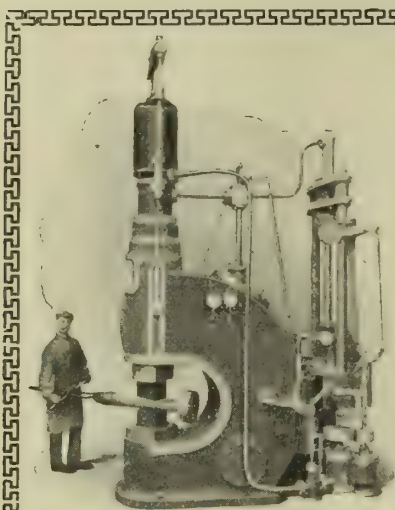
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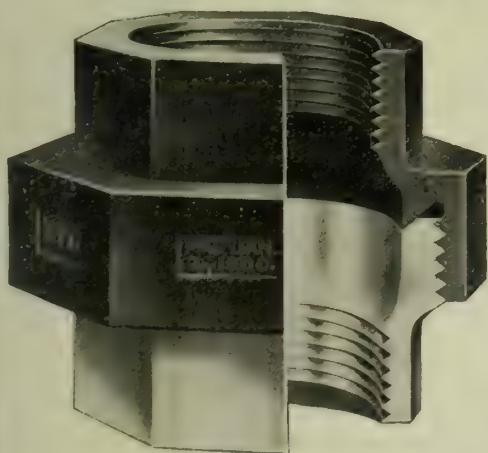
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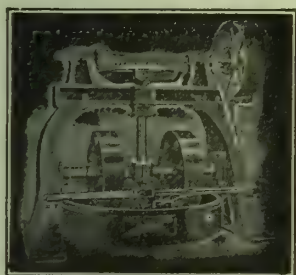
Denver

Birmingham

St. Paul

Pittsburgh

Phillips & McLaren Co.,
PITTSBURGH, PA.

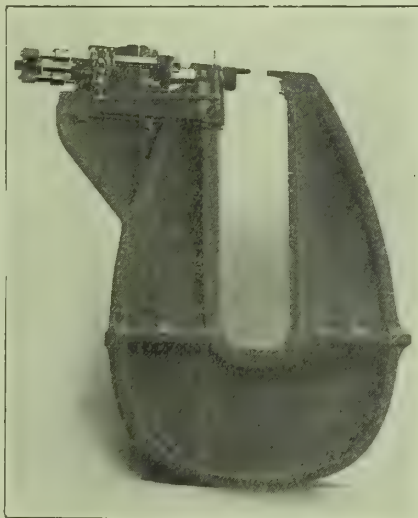


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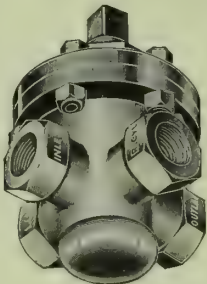
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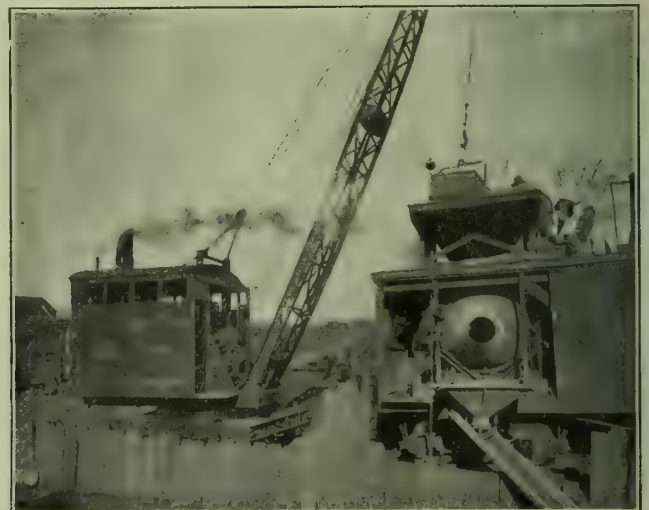
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CLEVELAND, OHIO.

INDUSTRIAL WORLD

Published Weekly in the Interest of Iron, Steel, Coke and Allied Industries.

43d Year. No. 39.

PITTSBURGH, PA.

MONDAY, SEPTEMBER 27, 1909.

Publicity Has Revolutionized Business.

IT used to be the common impression that the public had no interest in corporate existence and that the affairs of business men were not pertinent to the public at large. This has been changed. Publicity is now the order of the day and those who were formerly secretive have ascertained by experience that it pays.

The largest corporations have learned the lesson and are profiting by it. Smaller concerns are gradually being educated to the necessity, and eventually there will be no more secrets about commercial affairs than there are in the family.

If a man or a number of men conduct a straightforward business enterprise they are doing that which no man need be ashamed of. In fact, they should be proud of the undertaking and advertise it wherever and whenever it is possible. Publicity pays and it is the keystone on which future commercial and manufacturing operations are to be supported.

The man or men who do not advertise are behind the times. They are not worthy of the public's support. The scriptural quotation, "Seek and ye shall find; knock and it shall be opened unto thee," was never more applicable than at present.

The Industrial World offers excellent opportunities for making public announcements in its news and advertising columns. Use it. Publicity pays.

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Gallons Treated Daily.

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INDUSTRIAL WORLD

FORTY-THIRD YEAR.

PITTSBURGH, PA., SEPT. 27, 1909.

NUMBER THIRTY-NINE.

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Bell, 3909 Court.

Ten Cents per Copy—\$3.00 per Year

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Summary of General Iron and Steel Markets

BESSEMER IRON DUPLICATES PREVIOUS WEEK'S RECORD WITH FIFTY-CENT ADVANCE—STUPENDOUS RECORDS PROMISED FOR OCTOBER BY PLANS OF MILL AND FURNACE OWNERS — SHEET STEEL PRICES RISE—STEEL MAKERS AS BUYERS IN THE IRON MARKET.

WHILE Pittsburgh sold Bessemer iron at the new high price of \$18 last week, for this year's delivery, and the Connellsville operators literally went crazy over the prospect of \$3 furnace coke before January 1, pig iron producers all over the country prepared to put in blast every furnace available by the first of October, even the old stacks that for some years have been considered hopelessly out-of-date.

It is assured that the month of September will show a new high mark in both pig iron and finished steel production, except in one or two lines; but what is even more certain is that the month of October will show a tonnage of a magnitude that will surprise the average man in the trade. Rolling mills and finishing plants are rushing extensions, speeding up repair crews, and preparing to take care of such a demand for finished product as America has not seen since early in 1907.

In the East and the South pig iron followed the lead of the Pittsburgh market, Birmingham asking as high as \$15 for No. 2 foundry for this year's de-

livery, while Philadelphia furnace interests attempted to put the price of No. 2X up to \$18.50 in that market. Virginia and Southern Ohio furnaces again went out of the market until price conditions steadied somewhat on iron for next year's delivery.

There were reports in the East of preparations to import British pig iron and German scrap. The heavy iron ore movement on the Lakes continued. There were no further reports of purchases of foreign ores, however.

Business in both the merchant and the cast iron pipe trade is said to have increased 100 per cent since the opening of August. The McKeesport plant of the National Tube Company will show an unprecedented record for the present month of a production of 40,000 tons of pipe. Action by the Oklahoma courts, removing the restrictions that have prevented pipe line companies from piping gas beyond the limits of that State, forecasts immediate purchases of large quantities of pipe in the Western fields. Contracts let in New York, New England, West Virginia and the Southern States, and other large lettings pending, will call for an aggregate tonnage of 60,000

tons of cast iron pipe of the larger sizes open, before the close of the fall.

The South Chicago and Gary rail mills are to be called on to supply 500,000 tons of rails before the first of January. The bookings to date at these plants aggregate 350,000 tons, with 200,000 tons pending. Eastern roads still lag in the matter of placing their rail orders for winter rolling, and the Carnegie books still show little tonnage ahead. The Steelton mills of the Pennsylvania Steel Company have been compelled to go on Bessemer rails, changing from open hearth. At the Ensley mills, over 150,000 tons of standard rails are on the books. Structural mills are getting further behind in their bookings. The American Bridge Company has about 390,000 tons of orders on its books. The capacity of its Western plants is 70,000 tons a month, so that they are assured of full work for six months.

The only price changes in finished product lines during the week were on sheets, in which the American Sheet Steel & Tin Plate Company advanced prices on the blue annealed grade \$1 a ton throughout the list. A number of the independents had anticipated this advance several weeks back. Some independents advanced their schedules \$1 a ton on black and \$2 a ton on galvanized, and there is considerable spread in these lines.

The operation of the Carnegie Steel Company's new price card on steel bar extras is said to be working very satisfactorily. Some of the independents, however, for the present at least, will not adopt a uniform classification, the Republic Iron & Steel Company having announced a new card to be issued October 1, which will quote half extras as in the past.

The large steel mills have proved the heaviest buyers of pig iron in this district since the opening of the month. Besides large purchases by the Jones & Laughlin and Youngstown Sheet & Tube interests earlier in the month, the Lackawanna, Midvale Steel and Republic Iron & Steel bought in the open market during the week just ended for a total of about 35,000 tons of Bessemer.

The month of September will see an aggregate tonnage of 200,000 of Bessemer change hands in Pittsburgh district. The Steel Corporation is out of the market for the present, fearing a purchase of a large tonnage would force iron prices up to an unbearable degree.

More Pig Iron Capacity for October; Additional Furnaces Go in Blast

OPERATORS PLAN TREMENDOUS OUTPUT FOR FIRST MONTH OF LAST QUARTER — CARNEGIE STEEL PUTS IN ADDITIONAL STACKS.

Regardless of the probabilities of a new high record for pig iron for September, indications are October will show the greatest pig iron capacity working in all districts of the country, that has ever been known. The operating capacity shown September 15 will be increased by at least 10 stacks by October 15.

For the first time in its history the Carnegie Steel Company will by the close of the coming week have in blast 58 out of its 59 furnaces—only one furnace being idle. All the Steel Corporation's furnaces have an abundance of ore, so that there is no chance of a halt in output during the remainder of the season—the Corporation having piled up 1,000,000 tons of ore during the late depression.

The following partial summary shows new stacks in or about to go into blast:

Carnegie Steel Company—Steubenville and Zanesville, O., stacks to be fired September 27, leaving only one idle stack out of 59. It is out for re-lining.

Eastern Pig Iron Association — Of 43 stacks controlled by the Association, 33 are now operating, the other 10 being small and badly situated.

Mahoning and Shenango Valleys—Brier Hill and Mary furnaces have resumed. In the Mahoning valley the only furnace out of blast is Struthers, which will resume October 15.

Alabama—One additional Sloss-Sheffield, and one Tennessee Coal & Iron stack blown in during week, making six out of seven Sloss-Sheffield stacks in operation.

Ohio—Cleveland Furnace Company's stack blown in October 17. One additional stack in Ironton district to be blown in within a week.

Chicago—Iroquois Iron Company's Furnace B was put in blast, making all available furnaces in operation.

At least two more stacks in the East also will blow in between the 1st and the 15th of October, probably Nittany and Donaghmore.

Steel Plates for Lake Craft.

Specifications have been received by the Carnegie Steel Company for the steel for the three new steamships for the ore carrying trade on the Great Lakes which are to be launched next spring by the Pittsburgh Steamship

Company. The steel plates and shapes for the three vessels will total 30,000 tons.

Orders for the engines and other equipment have not been placed. The builders have promised that the boats will be available for the ore trade of 1910. The new vessels will give the Steel Corporation the largest capacity for iron ore handling that it has had since the Corporation was formed.

In order to provide for the increased capacity for the movement of iron ore, the Steel Corporation is planning to give the new all-steel ore dock which it will erect on the upper lakes, a total length of 2,305 feet, with a capacity of 192 ore bins on each side. These bins will be approached by tracks elevated above the water 74½ feet and from them ore can be dropped into the holds of the vessels with no delay. The proposed dock will be mainly of steel, with a concrete foundation.

PIPE ORDERS TO FOLLOW.

Important Oklahoma Decision—National Tube's New Record.

Word was received in Pittsburgh during the week from Guthrie, Okla., that the Circuit court will within the next 10 days, probably by September 28, issue a temporary restraining order against the State, to prevent the enforcement of the constitutional amendment by which is sought to restrict the piping of gas out of the State. Immediately on the handing down of this decision, it is understood, the Kansas Natural Gas Company will order the pipe for its line to the North, and work will start without delay on several other lines out of Oklahoma into neighboring States. Most of these western orders will be for 18-inch pipe.

As a result of the rush of Eastern orders, the National Tube Company's McKeesport plant is said to be making a new record for the month of September. Officials expect that the output of the one plant for the month will exceed 40,000 tons of pipe. Several large Eastern buyers are in the market for merchant pipe, among them the Monongahela Natural Gas Company for 15 miles of 16-inch.

Cast Iron Pipe Orders.

A particularly heavy market is reported from the Central and Southern States in cast iron pipe. The United States Cast Iron Pipe Company took orders during the week for 5,000 tons

from Seattle, Wash., and inquiries are pending for 20,000 tons at Atlanta, Ga. An order of 1,000 tons from Albany, N. Y., went to Eastern producers. New York City still has lettings of 3,000 tons hanging fire. Other tonnages at Lynchburg, Va., at Macon, Ga., and in the interior of West Virginia, also are to be let in a short time.

WESTINGHOUSE AIR BRAKE.

Net Earnings for Fiscal Year Pass Two Million Mark.

The annual report of the Westinghouse Air Brake Company for the fiscal year ending July 31, shows net earnings from all sources of approximately 15 per cent on the increased capital of \$14,000,000. Out of this amount 10 per cent has been paid in cash dividends, \$118,715.64 has been charged off against sundry accounts, to cover depreciation and patents purchased, and \$546,076 has been carried to surplus.

The annual meeting of the company will be held next month. During the year the pension system for the employees has been inaugurated with highly satisfactory results. A careful revision of the physical property has been made by a reliable appraisal company, the result of which shows that the item "Wilmerding plant, including general office and sundries," is carried at a conservative figure.

Following is the general balance sheet for the fiscal year:

Assets.	
Cash on hand	\$ 2,757,367.29
Acc'ts and bills receivable ..	1,825,550.54
Investments, including stock in associated companies ..	8,292,899.11
Patents at capital appraisal	2,000,000.00
Wilmerding plant, general office, sundries	2,379,787.16
Real estate, including Westinghouse building	1,800,000.00
Factory stores	2,420,371.21
Total	\$21,475,975.31
Liabilities.	
Capital stock	\$14,000,000.00
Accounts payable, including current monthly bills ...	304,309.41
Deferred liability account, including time deposits of associated companies	1,044,399.05
Depreciation reserve fund ..	550,000.00
Employees' pension fund ..	119,516.69
Balance, profit and loss account	5,457,750.16
Total	\$21,475,975.31
Abstract of General Profit and Loss Account.	
Balance July 31, 1908	\$ 4,911,673.96
Net earnings ..	\$2,039,273.09
Spec. charges ..	118,715.64
Net credit from operations ..	1,920,557.45
Total	\$ 6,832,231.41
Less cash divs. paid	1,374,481.25
Balance July 31, 1909	\$ 5,457,750.16

BUILD CANADIAN PLANT.**Standard Sanitary Manufacturing Company to Invaie the Dominion.**

It was announced during the week by Francis J. Torrance, vice president of the Standard Sanitary Manufacturing Company, of Pittsburgh, that plans had been completed for the erection of a new plant in Toronto, Canada, which will represent an outlay of \$1,000,000 in addition to the warehouses and showrooms, valued at \$225,000, already owned by the company in that city.

E. L. Davis, general manager of the company, is in Toronto conferring with representatives of the Grand Trunk and the Canadian Pacific Railway companies for switches and sidings. He closed the deal for the purchase of eight and one-half acres of land at \$42,500. In addition to this the city closed a street, giving the company a piece of ground which will be utilized.

Mr. Torrance said the plant alone will cost \$500,000 as now planned, not including equipment and cost of furnishing electric power from Niagara Falls. The plant will be fully equipped with electric motors and the latest modern machinery, which has been perfected after an experience of 30 years in the business in this country. A steam power plant will be built to provide power in cases of emergency, but otherwise it will not be used.

Bids will be advertised for in a short time and construction work will begin without delay. The factory is to meet Canadian competitors and much of the export business of the company, especially to England, will be handled from the Toronto plant, owing to the more favorable freight rate. The plant will employ 500 men.

To Reorganize Independent Plant.

A report comes from Sharon, Pa., that certain parties are hunting up the stockholders of the Western Tin Plate & Steel Company, which built an independent mill that was built a few years ago at Greencastle, Ind., but which went under soon after.

An attempt will be made to reorganize the company and operate the plant again. A number of the stockholders came East after the mill was closed. Holders of about \$50,000 of the preferred stock met at Anderson, Ind., recently, and agreed to transfer their interests to a new corporation being organized by J. P. Stone and associates of Pittsburgh, who were represented at the meeting by F. M. Lyons, of Greencastle. The new company will have a capital stock of \$300,000 cumulative preferred 6 per cent and \$300,000 of common. Preferred stock will be exchanged for the old stock. The bond-

ed indebtedness of the old company, 100,000, will be assumed. The mill has been idle for two years. The proposition is being submitted to the scattering shareholders.

Gas Pump for City Water Supply.

The gas engine pumping plant of the Sistersville W. Va., water works is being enlarged by the addition of a 100-horsepower vertical Westinghouse gas engine, driving a triplex pump through a friction clutch. Natural gas is used, having a fuel value of approximately 1,000 B. t. u. per cubic foot, and costing 15 cents per thousand cubic feet. The existing equipment of this pumping station comprised an 85-horsepower Westinghouse vertical engine, and the economy in using gas engine power having been so pronounced, extensions of this type of machine has been fully warranted.

Lackawanna Tipple Burns.

The big steel tipple at the Ellsworth No. 2 mine of the Lackawanna Steel Company at Monongahela, Pa., was destroyed by fire September 20. Crossed electric wires caused the blaze. The loss is \$50,000. The flames were prevented from reaching the shaft only after a stubborn fight. Machinery, hoists and a number of railroad cars were destroyed. The ownership of the plant is vested in the Ellsworth Collieries Company, a subsidiary of the Lackawanna.

Open Hearth to Start.

Officials of the West Penn Steel Company, Pittsburgh, announce the completion of the buildings of the new plant being erected at Brackenridge, Pa., and that operations will be commenced during the week in the open hearth department, and the bar mill. Machinery has been installed in the sheet mill and it is expected that department will be put in operation next week.

Absorb Indiana Concern.

The Pierce Electrical Specialty Company, of Elkhart, Ind., has been absorbed by Hubbard & Company, shovel manufacturers, of Pittsburgh, and the Indiana plant may be brought to Pittsburgh. The Hubbard Company makes are lamp crates and hangers and electrical specialties, and has been a thriving concern. No official announcement is yet ready.

Republic's Ovens in Blast.

The Republic Iron & Steel Company began firing its 138 coke ovens at Acheson, Pa., with the opening of last week. This is the last of the Republic's ovens to resume. They have been closed down since February 26.

ENGINEERS IN SESSION.**First Meeting of Western Pennsylvania Society for Winter Season.**

Members of the Engineers' Society of Western Pennsylvania held the first of their series of meetings for the fall and winter at the society headquarters in the Fulton building, Pittsburgh, September 21, at which the automobile was the subject of discussion. A lengthy and interesting paper was read by Walter W. Macfarren, mechanical engineer, who discussed the "Possibilities of the Commercial Automobile."

Presenting the progress of the automobile industry in the United States during the last two years Mr. Macfarren quoted the following statistics compiled by Charles Clifton:

	1898	1908
Capital invested	\$1,000,000	\$170,000,000
Makers	17	175
Cars built	239	50,000
Persons employed	638	60,000
Capital involved	\$1,000,000	\$ 95,000,000
Agencies	100	21,000

The speaker described the use of the commercial automobile in various sections of the country in the taxicab service and on interurban lines, and pointed out the possibilities of competing with the trolley systems in some sections. He presented figures giving the number of vehicles in use in a number of cities in the express and delivery service and stated that Pittsburgh is the only large city in the country in which they are not used extensively, owing to the exacting grades here.

Data was presented on the actual service of the commercial machine and various estimates on the cost of operation. The possibilities of the motor car for use by public service corporations and express companies, for local and interurban service was covered at considerable length.

Advocate a Re-Rolled Rail.

The Sweets Steel Company, Williamsport, Pa., with an annual capacity of 12,000 tons of ingots and 20,000 tons of rolled and forged products, has equipped its plant to engage extensively in re-rolling rails in 12 to 30-pound sections. The company advances the argument that when lighter sections are rolled from billets the best quality of material is not always used, but that in re-rolled rails the chemical properties of the material has already been passed upon and tested in the heavier section and that any effect of crystallization which may have occurred during the time the rail was in use has been eliminated by the heating and re-rolling process.

The claim is made that in a re-rolled section the purchaser is sure of a uniform product made from steel suitable

for rails, without flaws or defects, due to segregation, and that with proper equipment the surface appearance of re-rolled rails can be made equal to those rolled from billets.

START MORE MILLS.

Three Plants Ordered on By American Sheet & Tin Plate Company.

Three sheet plants heretofore idle have been ordered in operation by the American Sheet & Tin Plate Company, the Mercer plant, at South Sharon, and the Dresden and Canton, O., plants. All three have been idle for two years.

The South Sharon plant was built to operate with the Bray patents, and was originally classed as an experimental mill. Later it was closed down because of the depression. When it resumes, it will operate under the same practice as that used in other plants of the company, and the Bray attachment will remain unused.

The strike handicaps at the different plants of the company where the union domination was interrupted last July, have nearly all disappeared. At Elwood, Ind., the conditions have so improved that the application for an injunction against the strikers has been withdrawn. Twenty hot mills are said to be operating at that plant. The strikers' pickets are no longer on duty at the mill.

Press dispatches from Evansville, Ind., say that citizens of that town are negotiating with the American Sheet & Tin Plate Company, for the erection of a plant there.

Pittsburgh Steel at North Pole.

As is usual, when a noteworthy achievement has been accomplished, Pittsburgh, or Pittsburgh products are connected with the event, and as the discovery of the North Pole was the all-absorbing topic of the last week, it has developed that the first steel to reach the pole was made in Pittsburgh. The steel used in Commander Peary's sleds was cold rolled bars made by the Morris & Bailey Steel Company, at their McKeesport mill and supplied to the outfitters of the expedition by a New York jobber.

Pipe Plant for Sharon?

The Fraser Lock Bar Pipe Company, with offices at 50 Church street, New York, is negotiating with Sharon people for a site for a pipe plant. The company, which recently incorporated in Delaware with \$500,000 authorized capital, is composed largely of officials of the Petroleum Iron Works Company. The projectors, among whom are John Fraser, C. J. McDowall, George P. Bard, R. T. McCormick and A. W. Krouse, have the rights to patents

granted to John Fraser and Thomas Gray for machinery to manufacture lock bar pipe. The company will make standard lock bar pipe from 20 to 84 inches.

Gets Part of Large Contract.

Contracts were awarded on September 15, by the city of San Francisco, for the valves to be used in the new high-pressure water system to be installed there, and about \$150,000 of the amount was awarded to a Pittsburgh company as follows: Pittsburgh Valve Foundry & Construction Company, 1,940, 8-inch, 12-inch and 14-inch valves; Preston Water Wheel Company, San Francisco, 900, 10-inch valves; Union Machine Company, San Francisco, 260, 16-inch and 16, 18-inch valves.

At Beaver Falls Plants.

The Ingram-Richardson Manufacturing Company, at Beaver Falls, last week let a contract for an additional building, 165x75, three stories high, of brick and iron. The concern is filled with orders.

The Union Drawn Steel Company will make changes, doubling the capacity of the plant. At the cork works of the Armstrong & Company, additional department has been put into operation. At the H. M. Myers shovel works orders enough are on hand to insure a steady run in all departments till next spring.

Pittsburgh Company Gets Contract.

A telegram from Fairmont, W. Va., says William Miller & Sons, of Pittsburgh, have been awarded the contract to construct the eight-story office building by the Watson Company. The contract for the erection of this building was let to the Fuller Construction Company, of New York, but when the time came to sign the agreement the construction company did not sign up. The cost of the construction will be \$340,000.

New Bridge Shop at Memphis.

The Virginia Bridge & Iron Company, Roanoke, Va., will open its new bridge shop at Memphis, Tenn., by October 1. The shop will be fitted with modern equipment for fabricating bridges, heavy and light structural steel, car frames, etc.

Equipment for Pressed Steel Car.

Victor R. Browning & Company, of Ohio, have received an order for 24 Armington type hoists, to go into the plant of the Pressed Steel Car Company. This is a duplicate of an order received last February.

New Docks on the Lakes.

The Jones & Laughlin Steel Company received the order for 1,800 tons of

plates and shapes for the Union Dock Company, at Cleveland. The tonnage must be delivered in three months. The Jones & Laughlin Company also took the award for 1,200 tons for the Brown building, Euclid avenue, Cleveland.

SMOKE ABATEMENT.

Harrisburg Wants to Copy Pittsburgh's New Laws.

The Harrisburg Board of Trade is endeavoring to secure the passage of a smoke abatement law in that city.

The smoke abatement committee, at a recent meeting of the board, reported through its chairman, Walter Montgomery, who told of the success attained at the Harrisburg Pipe & Pipe Bending works last month with an oxidizer which save 50 per cent of coal. S. S. Eberts suggested that councils be requested to pass an ordinance somewhat similar to those in use at Pittsburgh and elsewhere and several members called attention to the fact that a third class city can only do that which it is authorized to do by an act of the Legislature.

J. Horace McFarland, who is a member of the American Civic Association, and has done much to aid enforcement of anti-smoke legislation, told the board that Harrisburg to-day could pass such an ordinance, as it came under police power.

New Machinery Installed.

S. W. Hay's Sons, Keenan building, Pittsburgh, report the sale of a Piqua blower to the United States Sanitary Company, Monaca, Pa., and three Ridgeway steam engines to the West Penn Hospital, Pittsburgh. Two of the engines are 18x18-inch cylinders and the third is 15x16 inches. The firm has also received a contract for a 25-ton electric traveling crane to be installed for a local steel company.

Sale of an Old Plant.

The receiver's sale of the plant of the Refined Iron & Steel Company, at Anderson road, in Crescent township, just out of Pittsburgh, which was adjourned on September 1 because of lack of bidders, is set for October 4, at 10 a. m., on the premises. Meyer Streng is the receiver.

Ohio River Dam Work.

Contracts have been let by the United States Government to the Dayton (O.) Iron works for two 44-inch improved new American turbines, to be installed vertically in open concrete flumes, and to be completed with gears and special bed plate to receive air compressors which will be built by the Hall Steam Pump Company, of Pittsburgh. These

will be installed in the turbo-compressor plant which the United States government is erecting at Lock No. 5, of the Monongahela river. These turbines will be of special nature, brass fitted, so as to prevent the corroding effect caused

The Beaver Valley Water Company, by the water of the Monongahela river, of Beaver Falls, also has ordered two vertical turbines.

Extensive Power Plant in Missouri.

The Westinghouse Electric & Manufacturing Company has received a contract for the equipment of one of the most important electric power projects in Missouri. This plant is being constructed by the Empire District Electric Company, of Joplin, to supply electric power to a number of manufacturing plants, as well as to the many zinc mines in that district.

The initial installation consists of two 10,000-horsepower Westinghouse steam turbines, with two Le Blanc condensers, two Westinghouse electric generators of 10,000-horsepower each, a switchboard and switchboard appliances for a central powerhouse, while in addition the Westinghouse companies will also supply the electrical machinery for 12 substations. These sub-stations will be distributed throughout the district. All the apparatus representing the first installation will aggregate an outlay of approximately half a million dollars.

The Westinghouse interests have also received contracts for 23 electric mine locomotives from all parts of the country.

New Plants in West Virginia.

The Steel Fireproofing Company recently located above Wheeling, has finished its new building and will begin operations next month. The company is composed of New York men, and the new concern, which is in charge of the treasurer, H. E. Marks, starts business with excellent prospects.

The Preston County Coke Company on the M. & K. Road is doubling the size of its plant at Cascade and building 100 new ovens.

Freights on Rails Reduced.

Reductions in freight rates on iron and steel commodities from Pittsburgh and other points in western Pennsylvania and eastern Ohio, have gone into effect. Effective September 10, the carload rate on steel rails from Johnstown, Pa., and Cumberland, Md., was reduced from \$14 to \$13.70 per gross ton. A new special commodity rate of \$13.10 per gross ton. A new special commodity rate of \$13.10 per gross ton on rails from Lorain, Ohio, to Pacific Coast terminals has also been made. Effective

Production of Iron Ore, Coke and Iron and Steel in 1908 by U.S. Steel and Independents

The October issue of the Iron and Steel Association "Bulletin" gives the following table on the production in 1908 of iron ore, coke, pig iron, steel ingots and castings, finished rolled iron and steel, wire nails, and tinplates and terne plates by the United States Steel Corporation and the independent iron and steel companies; also the shipments of iron ore, from Lake Superior region. The table shows that the Corporation produced in 1908 considerably less than one-half of the total production of pig iron and finished rolled iron and steel and over one-half of the total production of

steel ingots and castings. All its figures include the production of the Tennessee Coal, Iron and Railroad Company in 1908.

With the exception of rolled forging blooms and rolled forging billets all unfinished and intermediate rolled products, such as billets, blooms, slabs, sheet bars, tinplate bars, muck bars, etc., are not included in the table. Nor do the figures include hammered, car, locomotive, or other axles, anchors, shafting, hammered or pressed armor plate, and other hammered or forged products.

	By U. S. Steel	By independent	Total	Pct. U. S. St'l
Iron ore shipments from Lake Superior and the total iron ore production in 1908; also coke production in the same year.				
Shipments iron ore, Lake Superior region, gross tons	14,579,613	11,435,374	26,014,987	56.0
Total production iron ore 1908, gross tons	16,662,715	19,320,621	35,983,336	46.3
Production coke 1908, net tons	8,169,931	17,863,587	26,033,518	31.3
Iron and steel actually produced in calendar year 1908, gross ton.				
Speiseleisen and ferro-manganese....	115,344	36,674	152,018	75.8
Bessemer, basic, low-phos., foundry, forge, ferro-silicon, etc	6,819,064	8,964,936	15,784,000	43.2
Total pig iron, including spiegel, ferro-silicon, etc.	6,934,408	9,001,610	15,936,018	43.5
Pessemmer steel ingots and castings...	4,055,275	2,061,480	6,116,755	66.2
Open-hearth ingots and castings ...	3,783,438	4,053,291	7,836,729	48.2
Total Bessemer and open-hearth...	7,838,713	6,114,771	13,953,484	56.1
Bessemer steel rails	795,713	558,523	1,354,236	58.7
Open-hearth steel rails	260,580	306,724	567,304	45.9
Structural shapes	510,343	572,838	1,083,181	47.1
Plates and sheets, including black plates for tinning	1,377,080	1,272,604	2,649,693	51.9
Wire rods	1,234,220	582,729	1,816,949	67.9
Bars, skelp, nail plate, iron rails, and other finished rolled products	1,394,179	2,963,247	4,357,426	31.9
Total finished rolled, including rolled forging blooms and billets..	5,572,124	6,256,665	11,828,789	47.1
Wire nails, kegs of 100 pounds	6,529,718	4,133,254	10,662,972	61.2
Tinplates and terne plates, gross tons.	386,718	150,369	537,087	72.0

September 20, car wheels and axles, when shipped in straight carloads, were given a rate of 77 cents per 100 pounds from Pittsburgh, Butler, Homestead, McKees Rocks and Munhall to the Pacific Coast. The old tariff imposed the local rate between these points and Chicago or St. Louis, plus the 65-cent commodity rate regularly charged on car wheels between St. Louis or Chicago and the Pacific coast.

To Build Levees at Dayton.

Dayton, O., will vote next November on a \$400,000 bond issue on providing for the straightening of the Miami river levees. City Engineer Cellarius, whose

force had just completed the survey, reported this to be the lowest possible cost of the improvement which includes five miles of 50-foot levees sufficiently wide for Boulevard purposes.

Inasmuch as 600 acres of city ground will be reclaimed, and as the National Cash Register Company will be largely benefited, that concern is expected to contribute a substantial sum.

Looking for Site.

The Ward Nail Company, Youngstown, is looking for a site on which to erect a plant to manufacture nails by a new process.

Extensions in Steel Car Industry; Standard Company's Baltimore Plan

PITTSBURGH CONCERN HEADS MARCH OF EXPANSION IN FIELD—MANY PROJECTS AN- NOUNCED IN THE WEST.

Plans are said to be well along by the Standard Steel Car Company, of Pittsburgh, for improvements and extensions to cost \$500,000 to \$750,000 to the plant of the South Baltimore Steel Car Company's plant, negotiations for the purchase of which by the Standard Company are virtually closed. Plans also will be announced by the Standard company shortly of extensions mapped out for its forge plant at Ellwood City, Pa., operated by the Steel Car Forge Company, a subsidiary of the Pittsburgh concern.

Considerable property adjoining the Ellwood City plant already has been vacated by the Ellwood City council, to make room for the extensions. Work is expected to begin next month. The offer of the company for the South Baltimore plant, it developed during the week just closed, is \$340,000 cash, instead of 60 per cent of the face value of the claims in cash and 40 per cent in stock, as has been reported. The offer has been submitted to the creditors, and its acceptance is practically certain.

Plans for the enlargement of the Butler plant of the company call for a steel passenger coach department. Foundations for the piers of the new steel mill at Lyndora, near Butler, which the company is building, are nearly completed. The Butler plant is expected to go on double turn by the middle of October. The steel wheel plant already is running double turn.

Many Car Works Extensions.

No branch of the finished iron and steel product trades has planned more extensive enlargements for the coming year than the steel car and car equipment lines. Here are some of the enlargements and improvements announced, under contract, or already in construction, aside from the Standard company's extensions:

Berwick, Pa. — American Car & Foundry Company has under way extensions to its Berwick plant to cost \$500,000; will increase capacity by 50 cars.

Mt. Vernon, Ill. — Mt. Vernon Car Manufacturing Company has begun construction on new steel car plant, to be operated in connection with its wooden car manufacturing plant, to have capacity for 50 steel cars a day.

Joliet, Ill. — Joliet Steel Car Manu-

facturing Company has purchased 60-acre site three miles from the city and has plans completed for a car building and repair plant; cost not stated.

Pullman, Ill. — Extensions to the Pullman plant, in buildings and equipment, now under way and planned, will represent an expenditure of \$2,000,000. About 7,500 tons of structural steel and much equipment ordered.

Columbus, O. — Ralston Steel Car Company is expending \$60,000 enlarging capacity of forge and other departments, bringing its output up to 60 cars daily.

Minneapolis, Minn. — Peteler Car Company, successor to Kilgore-Peteler Company, is making extensive alterations at its plant, near Minneapolis.

Chicago — Blue Island Car & Equipment Company started new rolling mills in operation during present month; other improvements in contemplation.

Portland, Ore. — Pacific Car & Foundry Company, newly incorporated with \$1,000,000 capital, has plans completed for the erection of a new plant.

Birmingham, Ala. — Bulard Door & Equipment Company will build a plant in Birmingham, to cost \$50,000, to manufacture car door equipment.

Racine, Wis. — Solid Steel Car Wheel Company, Chicago, has plans completed for a new plant here, to cost \$140,000, for the manufacture of forged car wheels.

New Car Orders.

Recent orders received by the car companies, include a supplementary order for the Baltimore & Ohio for 500 refrigerator cars from the Whipple Car Company, Chicago.

The New Orleans & Northeastern has ordered 100 gondola cars and 100 box cars from the American Car & Foundry Company.

The Mather Stock Car Company, of Chicago, has ordered 100 gondola cars from the Standard Steel Car Company.

In addition to previous orders, the Chicago Great Western has ordered 250 steel stock cars from the American Car & Foundry Company.

The Northern Pacific is in the market for 100 refrigerator cars. The Lehigh Valley is in the market for 1,000 gondolas, 1,000 box and 1,000 hopper cars.

In addition to the 2,200 freight cars ordered built at its shops some weeks ago, the Pennsylvania Railroad Company has authorized the Altoona shops to begin work immediately on 200 steel frame automobile cars. These cars are of the largest type of box cars made.

With the orders now on hand the shops have enough work to keep them busy until late next spring.

BOSTON "STEEL CASES."

Structural Companies Made Defendants on Charge of Collusion.

In Boston Superior Criminal court September 20 the cases were called growing out of the "Boston structural agreement," in which the city finance committee, after investigations covering several months, claimed to have discovered evidence of a conspiracy in bidding for contracts to supply structural steel to the city of Boston and a number of indictments resulted.

When the Suffolk grand jury returned the indictments in the steel cases last March there were 38 defendants; of which 22 were individuals and 16 corporations. Since then two of the individual defendants, Samuel M. Simpson and Edward F. Milliken, have died. The corporations named in the indictment are:

Berlin Construction Company, Phoenix Iron Company, the United Construction Company, Canton Bridge Company, Brown-Ketchum Iron Works, Chelmsford Foundry Company, American Bridge Company, of New York, G. W. & F. Smith Iron Company, Smith & Lovett Company, Eastern Bridge & Structural Company, Mogquier & Jones Company, Boston Bridge Works, New England Bolt & Nut Company, now known as New England Bolt & Steel Company; New England Structural Company and the Levering & Carrigues Company.

The cases are expected to last three or four weeks. The opening of the trial brought together the most brilliant assemblage of attorneys ever seen at the Suffolk bar. At the end of two days the jury panel was still unfilled. A motion that trial of the cases against the corporations be postponed for a supreme court ruling on the subject of jurisdiction was promptly overruled, as was also a general motion to quash the indictments. All of the defendant companies are represented by special counsel in the case.

U. S. Steel Gets More Coal.

Besides the absorption of the holdings of the Hammond Coal Company, in Northern Indiana, as noted in the Industrial World of September 13 the United States Steel Corporation is now said to have taken over the entire holdings of the Oak Hill Company, and the Dering Coal Company, the latter being well-known in the Indiana and Illinois field, while the Oak Hill Company has important workings in the Clinton field. It is said that 29,000 acres of coal land are involved in the deal and that the money to be paid for this and the mine tipples and fixtures is estimated at upward of \$2,000,000. It has been known

for several months that the steel trust has been busy buying coal lands from farmers in Northern Indiana and in Illinois, but the plan of taking over the big coal companies and operating their properties directly had not been heard of until recently.

NEW ELECTRIC FURNACE.

Steel Corporation's Massachusetts Plant Ready for Operation.

The Heroult electric furnace installation which the United States Steel Corporation is making at Worcester, Mass., for the making of high grade wire cable, will be ready for operation October 1. The furnace will be operated on electric current secured from an outside source, and considerable delay has arisen in this connection. The plant is on an experimental scale.

The first pig iron made in an electric furnace, which has been put on the market commercially comes from the plant at Heroult, Shasta county, California. This plant uses furnaces of the Heroult type, and electric power is furnished by the Pit river. The first regular shipment was 20 tons of pig iron delivered in Redding. The electric furnace in operation is turning out about 25 tons of iron daily and delivering it at a cost less than the price at tidewater in California. Some few changes have still to be made before the process will be considered completely successful.

Census of Electric Furnaces.

London "Engineering," after taking a census of electric furnaces now operating, says:

According to a recent summary there are about 80 electric furnaces in operation in the manufacture of steel. The Heroult system heads the list with 19, next comes the Kjelling system with 14, that of Stassano with 10, and that of Rochling-Rodenhauser, as well as that of Girol, with the same number. The rest are divided among some eight systems. The Heroult and Kjelling, as well as several of the others, use one-phase alternate current. More than a score of the above electric furnaces are employed in Germany and Luxembourg; a dozen in Italy, of which most are of the Stassano type; the rest are distributed over Sweden, Austria, the United States, Switzerland, England, Belgium, Spain, and the Brazil; others, however, are in course of construction in different countries, and the above do not include the electric furnaces that produce pig iron direct from the ore, which are to be found in Canada, California and Sweden.

Morristown, N. J. — New York & Philadelphia Brick Company's plant at Whippany destroyed September 14.

SWEDISH MINERS JUBILANT.

Look for Record Year in Export of Iron Ore to United States.

The Bureau of Manufactures at Washington, on September 23, made public a report from Consul Edward D. Winslow, of Stockholm, on the new interest in the American market by the iron-ore exporters in Sweden, in which he says:

"There will be held in Stockholm next year a geological congress mainly to obtain a fair estimate of the iron supply of the world. Sweden has lately felt secure, as her deposits in the north are very large and are now being worked by modern methods. There are reports of large finds in Ouenza, in Algiers, and already the Krupp, Gelsenkirch, and other large firms have formed a company to work them. Germany has been the main customer of Sweden's iron ore, but the news of the reduction of the American duty on the crude ore has made the Swedish iron ore exporters look for a market in the United States, and already some 200,000 tons are on the way to Philadelphia.

"The Swedish iron exporters are jubilant at the prospect of lower duties on the raw product in the United States, and the prospect of German importers turning to new quarters for supplies is offset by the immediate opening of a new market in America. According to the last freight quotations a rate of \$1.61 per ton from Luela, Sweden, to Philadelphia was made for shipments already negotiated.

"Reports from Brazil speak of large new finds in that Republic, but although the report of the government of Brazil lately issued is sensational, no competition is expected from that quarter for a few years, or until the deposits there can be opened, which should take some time."

To Build Auto Trucks.

Cincinnati is to have a plant for the manufacture of gasoline automobile trucks. The company will be known as the United States Motor Truck Company, and has been chartered at Columbus at \$100,000.

The company is now seeking a location in Cincinnati, and will begin operations before the end of the year, turning out to start with, about 10 trucks a week. Trucks of one, two and three ton capacity are to be made and the business pushed to endeavor to substitute the motor truck for the light delivery wagon of to-day.

No Bids for Cuban Vessels.

The Republic of Cuba is in the market to acquire some small vessels of light draft for its revenue cutter service and the Cuban officers are expressing

impatience, according to advices received at the State Department at Washington, because shipbuilding firms in the United States have made no response to invitations to submit proposals for building the boats. The Cuban Government has agreed to accept the vessels at the port of construction.

PLAN GREAT BARGE LINE.

Mississippi Valley Project Is Incorporated in Delaware.

Planning to spend \$7,500,000 in steamboats, steel barges, piers, warehouses and equipment within 18 months, the Mississippi Valley Transportation Company, with a capital of \$10,000,000, was chartered at Dover, Del., on September 20. Senator William J. Stone and Congressman Champ Clark, of Missouri, and 112 others, including a number of congressmen, are the incorporators.

The concern will operate a transportation line on the Mississippi river, which the projectors claim will revolutionize traffic on that waterway.

The officers of the company are: President, W. K. Kavanaugh; vice president, Congressman Richard Bartholdt, of Missouri; secretary, John L. Matthews.

In speaking of the new company, President Kavanaugh, who is also the president of the Lakes-to-the-Gulf Deep Waterways Association, said: "We expect to build about 180 barges. Some of them will be able to carry 4,000 tons on eight feet, some 1,000 tons on four feet, some 600 tons on three feet—but all steel, snag-proof, of the very latest design. We expect that our towboats will give us a fleet capacity for the year of about 6,000,000 tons, and we expect to have to increase beyond that in a couple of years."

The concern will put into operation a new system of towboats and steamboats, engage in agriculture, forestry, merchandising and mail trade. Warehouses will be built and wharves, piers, jetties and deeper channels will be constructed in the river. The 114 incorporators include the most prominent business men of the South and Middle West. Each signed and swore to his signature in the charter, necessitating that document's passage all over the country before completion.

The company will provide the latest types of freight loading apparatus at the terminals, and all the necessary accessories for proper handling of traffic by water on a large scale.

The plans of the company includes lines extending not only up and down the rivers, but by sea to New York, Boston and Philadelphia, to Galveston and Tampico, to Tehuantepec and Panama, and eventually to South America, and alliances already formed for European

business promise the diversion of a great deal of import traffic to New Orleans as soon as the new company's barges are afloat. Nearly all the incorporators have been actively identified with the deep waterways movement, and they all believe that the river will soon be deepened to the depths they advocate. They will not wait for this, but intend to develop traffic on the channels now existing.

The river front of Memphis is 125 feet deep at low water, and there are now few bars between Cairo and New Orleans. In the main line between New Orleans and St. Louis barges drawing eight feet and carrying 4,000 tons each are promised, and as soon as river conditions warrant this service will be supplemented with through steamboats from St. Louis to New York. Smaller barges, built of steel, but of larger capacity than ever before tried on the river, are to be used on the upper Mississippi and the tributaries. Minneapolis alone ships 1,600,000 tons of flour a year, and there are other rich cargoes waiting by the river for the new company to collect. The promoters expect to buy and operate short connecting railways to broaden their field.

Everything which could remind one of the old packet boat days will be done away with. There will be no negro roustabouts, no landing at plantations. Fast through boats will touch only at the principal cities, and freight will be handled on a broad system, which will make the Mississippi an international influence. The effect upon New York when New Orleans begins to attain power in the import trade—as it has already in coffee importations—will be noticeable. The new company has headquarters in St. Louis and will begin at once building a fleet of 180 vessels.

The list of incorporators follows:

W. K. Kavanaugh, St. Louis; W. J. McGee, Washington, D. C.; K. M. Condey, St. Louis; A. P. Murphy, Rolla, Mo.; Richard Bartholdt, St. Louis; William Warren, Kansas City, Mo.; Patrick F. Gill, St. Louis; Champ Clark, Bowling Green, Mo.; William J. Stone, Jefferson City, Mo.; E. J. Magerstadt, Chicago, Ill.; Polite Ennis, Elvins, Mo.; George W. Gordon, Memphis, Tenn.; R. Y. Broushard, New Ithaca, La.; Charles H. Morgan, Joplin, Mo.; William P. Borland, Kansas City; J. C. T. Robinson, Lonoke, Ark.; William A. Dickson, Centerville, Miss.; Charles A. Crow, Caruthersville, Mo.; U. B. Thistlewood, Cairo, Ill.; Ferris I. Garrett, Dresden, Tenn.; Charles E. Fuller, Belvidere, Ill.; E. L. Scharf, Ph. D., Washington, D. C.; L. P. Padgett, Columbia, Tenn.; Joseph W. Byrns, Nashville, Tenn.; A. M. Byrd, Philadelphia, Miss.; Albert Estophinal, Estophinal P. O., La.; I. M. Griggs, Dawson, Ga.; James P. Latta, Telamah, Neb.; E. P. Brinegar, San Francisco, Cal.; John M. Ewen, Chicago, Ill.; Edward H. Patterson, Chicago; Lyman Woolert, Chicago; George

C. Sikes, Chicago; James A. Pugh, Edward A. A. Halsey, Homer Stillwell, all of Chicago; Frederick H. Kriesman, Adolph Nast, J. B. Shifflette, J. L. Saunders, C. D. Johnson, all of St. Louis; A. C. Landon, Clinton, Mo.; L. T. Kavanaugh, Memphis, Tenn.; Lon D. Stephens, St. Louis; John A. Miller, Ralph P. Taylor, both of Pittsburgh; J. S. Warren, S. M. Neely, P. P. Williams, W. H. Russell, all of Memphis; Joseph A. Airey, John F. Parker, Philip Wedlein, Peter F. Pesau, M. B. Trezerant, all of New Orleans; Simon H. Lounberg, A. G. Campbell, J. D. Barksdall, Thomas Reber, Natchez, Miss.; W. H. Fitzhugh, Adolph Rose, B. W. Griffith, all of Vicksburg, Miss.; W. A. Oldfield, Batts-ville, Ark.; J. Wheelock, A. Bragg, Harry H. Myers, O. C. Ludwig, C. C. Kavanaugh, Guy B. Tucker, all of Little Rock, Ark.; John A. Fox, Blytheville, Ark.; Robert W. Hunt, Chicago; E. C. Shankland, E. S. Conway, E. B. Bartlett, M. N. Lufkin, George I. Dowling, T. Edward Wilder, all of Chicago; Alexander W. Van Hater, Minneapolis, Minn.; Lee S. Estelle, Omaha; Jerome Twichell, A. H. Minger, J. D. Davidson, all of Kansas City; J. L. Schallaire, Milwaukee; J. E. Smith, Forest Ferguson, Murray Carleton, August Schallfr, Edward Kohen, Louis Paelo, L. F. Kingsland, all of St. Louis; A. G. Oberle, F. S. Churchill, John Bland, all of Burlington, Iowa; Burton F. Peek, Moline, Ill.; W. A. Rosenfield, Moline, Ill.; S. S. Davis, T. B. Davis, Phil Mitchell, M. L. Henderson, all of Rock Island; Lon Bryson, Davenport, Iowa; G. W. Crumpton, Moline; T. F. Halligan, G. Watson French, Nathaniel French, Davenport, Iowa; C. T. Jones, George R. Collett, C. L. Gray, W. H. Shelby, H. W. Peters, J. J. Newheimer, Joseph W. Lewis, all of East St. Louis; Thomas K. Neidringham, St. Louis.

Ironton's Bridge Project.

News reports from Huntington, W. Va., state that work is proceeding on the terminals by which the Island Creek Fuel Company and the Detroit, Toledo & Ironton railway company plan to ferry Guyan valley coal across the river to the railroad company's yard at Ironton. Four new barges are being built at the Howard boat yards at Jeffersonville, Indiana, to be used for the transportation of coal from the tippie of the Island Creek company at Huntington to the yards of the D. T. & I. at Ironton.

Each of the barges under construction will have a capacity for carrying 12 loaded cars. These cars will be run onto the boats at Huntington, on tracks for into the river and taken to the yards of the D. T. & I. at Ironton over similar tracks. The barges are to cost something like \$25,000. It is stated also that the barges are to be completed and delivered within the next two months.

Bridge Hearing Postponed.

The hearing on the raising of bridges in Pittsburgh before the board of officers of the Corps of United States Engineers, scheduled for October 20, has been postponed to November 9. Changes

in the Sixth, Seventh, Ninth, Eleventh, Sixteenth, Thirtieth, Thirty-third and Forty-third street bridges will be taken up.

STEEL IN CONCRETE.

Trade Authorities Declare Reinforcement Must Be Enclosed Unpainted.

A number of years ago extensive tests were made by the Jones & Laughlin Steel Company on the ability to secure a perfect bond in reinforced concrete work with painted and unpainted structural material. The tests in all cases showed that the union of the steel and the cement was the stronger without the coating of paint, and even less liability to corrode. The "Engineering News," has the following editorial in a recent issue on the same subject:

If anything at all is well established regarding reinforced concrete it is that the reinforcing steel must be kept clean from anything that would tend to destroy that bond between steel and concrete, which is the safety of the joint material. Especially in the coating of the reinforcing rods with paint, against possible corrosion, a deplorable practice. It is not only unnecessary as a protective measure, but the substitution of two planes of poor bond, concrete to paint and paint to steel, for the one strong bond of concrete to steel is certainly weakening from a structural standpoint. It is, then, with considerable surprise that we read in the proceedings of the fifth annual convention of the Maintenance-of-Way Master Painters, an organization of railway men that "all engineers are of the same opinion, that if a suitable paint—one that will withstand the ravages of the alkali—can be had, the trouble of rusting and corroding of steel embedded in concrete will have ended, and there is no doubt as to this."

Our surprise is not so great though, when we read that the extract is from a paper by a representative of a paint firm, looking doubtless toward a big field of business in the coating of all reinforcement with paint. His remarks are discredited by the ignorance of reinforced concrete displayed in such statements as "Concrete will not adhere to iron" and "Steel embedded in the very best stone concrete has rusted and corroded badly and some was entirely destroyed."

For the benefit of those master painters solicitous of the safety of the reinforced concrete structures of their railways, we can assure them that the remedy for corroded reinforcement is not in their hands, but with the constructing engineer, who is supposed to see to it that concrete encasing iron or steel is solid and non-porous. With a stone concrete, well made and thoroughly compacted, all evidence at our command shows no danger of iron corrosion.

New Concrete Pile Contracts.

Among contracts recently awarded the Raymond Concrete Pile Company, of Chicago, are: Piles for six-story reinforced concrete factory building of Brewster & Company, carriage builders,

at Queensboro Bridge Plaza, Long Island City, N. Y.; foundations of power house for Illinois Traction system, at Venice, Ill.

CANADIAN CEMENT MERGER.

Large Companies Taken Over by New Consolidation.

The Canadian cement companies taken over by the newly-organized Canada Cement Company, limited, with headquarters in Montreal, include the following:

International Portland Cement Company, limited, Hull, Que.; Vulcan Portland Cement Company, limited, Montreal; Lehigh Portland Cement Company, limited, Belleville, Ont.; Canadian Portland Cement Company, limited, Marlbank, Ont., and Port Colborne, Ont.; Lakefield Portland Cement Company, limited, Montreal and Lakefield, Ont.; Owen Sound Portland Cement Company, limited, Shallow Lake, Ont.; Alberta Portland Cement Company, limited, Calgary, Alta.; Belleville Portland Cement Company, limited, Belleville, Ont.

The corporation, by means of contracts already made, proposes to acquire control of a majority of the shares of the capital stock of the Western Canada Cement & Coal Company, limited, Exshaw, Alta., and the Eastern Canada Portland Cement Company, limited, Quebec. The corporation has \$5,000,000 bonds, \$10,500,000 preferred stock and \$13,500,000 common stock. The directors are: Sir Sanford Fleming, J. M. Kilbourn, J. R. Booth, George E. Drummond, J. S. Irvin, W. C. Edwards, W. D. Matthews, R. W. Kelley, Robert MacKay, W. R. Warren, W. H. E. Bravender, E. M. Young, G. A. Cox, W. M. Aitken and C. H. Cahan.

Canadian Manufacturers' Plaint.

At the sessions of the Canadian Manufacturers' Association, at Hamilton, Ont., last week, President R. Hobson, in referring to the American tariff, characterized the action of the American Senate as a violation of the trust reposed in it by the people of the United States and barren of all desire to create closer trade relations with Canada.

Its action, he said, put the farmer on the same level as the manufacturer, both of whom must look to the home market.

Concrete for "Fruit Tree Pest."

A Siverly, Pa., fruit grower believes that he has found a cheap and effective means of getting rid of the "borer," which just now is so destructive to plum trees, says the "Oil City Derrick." They originate in an egg laid on the bark of fruit trees and as soon as they are incubated, start for the inner bark, where they grow to maturity and then striking the sap, commence going down

toward the roots, living in the tree during the winter. One borer is capable of killing a 12-year-old plum tree. The Siverly man found traces of borings at the foot of one of his trees, but was unable to reach the pest with wires. To chisel into the heart of the tree meant killing the tree, and that was all the borer could do. As he had all to gain and nothing to lose, he tried the experiment of filling the hole in the tree to a depth of several inches with Portland cement, realizing that, deprived of air, the borer would die. The cement hardened and hermetically sealed the chamber the borer had made for itself and the "critter" died.

RUSH EASTERN FURNACES.

Week's Output in Schuylkill District.

It is announced at Reading that the pig iron furnaces of Eastern Pennsylvania are producing about 30,000 tons weekly. The Keystone furnace, at Reading, which is now being remodeled, will be ready to start about October 1. The Emaus furnace will resume late in the fall.

Number 3 stack of the E. & G. Brooke Iron Company, Birdsboro, now being rebuilt, will be ready for operation late in December. It will have a capacity of about 300 tons.

The furnaces in the Schuylkill, East Penn and Lebanon valleys in blast, are Sweedeland, Pittstown, two; Birdsboro, Temple, Lesport, Topton, Alburtis, Robeson, Sheridan, Lebanon, four.

The Warwick Iron Company's merchant furnace also was put in during the week, and the last of the Lebanon stacks of the Pennsylvania Steel Company is in operation.

Demand for Bessemer Rails.

For the first time in nearly two years, the rail mills of the Pennsylvania Steel Company, at Steelton, were put on Bessemer rails last Tuesday. All the orders for Bessemer steel rails received by the company since November, 1907, have been filed at Sparrows' Point, the Steelton mills making rails of open-hearth and Mannard steel only. The present order for rails of Bessemer steel amount to 5,000 tons.

Drouth Affects Plants.

The prolonged drouth threatened to affect many Eastern Pennsylvania steel plants during the week. In the coke regions, it was declared that many reservoirs will be entirely dry within 10 days unless rain falls. The Cambria Steel Company may be forced to shut down a portion of its plant at Johnstown because of the water famine,

ST. LOUIS' FREE BRIDGE.

City Authorities Anxious to Get in Market Early for Steel.

The Southern Railroad, through T. C. Powell, its vice president, has agreed to meet the city of St. Louis and voluntarily make a deal by which ground can be acquired for the east pier for the proposed free bridge across the Mississippi river. Powell has ordered an investigation of the company's title to the property opposite the Chateau avenue site, where the bridge will be located, and has informed the city comptroller that if the road cannot sell the ground on account of the mortgage hanging over it the city will be given a lease.

The St. Louis Improvements Board has passed a measure authorizing the purchase of steel for the new bridge.

A contract will be let for the purchase of the steel as soon as the ordinance is passed by both houses and signed by the mayor. The steel will cost over \$2,000,000, and its purchase now is expected to effect a saving by heading off a possible increase in the price.

Colorado Fuel.

Preliminary figures of the income account of the Colorado Fuel & Iron Company for the year ended June 30, follow:

	1909	1908	1907
Gross	\$20,344,630	\$22,099,880	\$23,792,298
Exp.	17,443,619	19,546,513	21,196,254
Net	\$2,901,011	\$2,553,367	\$2,596,044
Oth. in.	445,761	327,127	395,053
Tot. in.	\$3,346,772	\$2,880,494	\$2,992,097
Chg's	2,488,396	2,586,128	2,522,005
Surp's	\$858,375	\$294,366	\$470,092

Bridge Contracts in South.

At Luray, Va., bids have been let by the State Highway Commissioner for constructing two steel bridges over Shenandoah river in Page county, to be 546 feet and 577 feet in length, respectively. The Penn Bridge Company, of Beaver Falls, Pa., received the contract. The Penn Bridge Company has put its plant on double turn for the first time in two years.

Eastern Puddlers Get Increase.

The announcement was made by the Thomas Iron Company, at Easton, Pa., on September 22, of an increase to the puddlers in the Lehigh valley, in harmony with the recent increase in the puddling rate in the western mills.

The announcement was made by the can safes in Russia, provided they are shipped in parts and set up in that country. Otherwise the custom duties would be almost prohibitive,

PERSONAL.

J. H. P. Wharton, during the week just ended assumed his duties with the Republic Iron & Steel Company as assistant general manager of sales. Mr. Wharton will take charge of the company's new pipe department. Actual production will not begin until next spring and meanwhile Mr. Wharton will be engaged in office work in connection with the new department. Until his resignation the first of this month he occupied the position of assistant general manager of sales of the LaBelle Iron Work. The alignment of the Republic Iron & Steel Company's sales department, Severn P. Ker leaving October 1 to assume the position of general manager of the Sharon Steel Hoop Company, is as follows: C. T. Johnston, general manager of sales; J. H. P. Wharton, assistant general manager of sales, in charge of pipe; George L. Claypool, assistant general manager of sales, in charge of other products.

In the current issue of the "Iron Age," which, as reported by the Industrial World a week ago, was sold with its allied publications to the Root Publishing Company, of New York, on September 14, the publisher, David Williams, takes formal leave of his readers, relinquishing control to the new owners. In his valedictory, Mr. Williams reminds the reader that when the "Iron Age" was established, 54 years ago, America was dependent on Europe for most of her manufactured products. "That she might throw off that dependence and become herself the greatest industrial country in the world," says Mr. Williams, "was the hope and ambition of my father, John Williams, the founder of the Iron Age. That result has been achieved, and the journal he established has not been without influence in its accomplishment. It has been my lifework, and I have been proud of its success and standing."

F. D. McEnteer and R. F. Griffiths have engaged in business in Pittsburgh as contracting engineers under the firm name of McEnteer & Griffiths. The company will prosecute a general line of engineering and contracting work and will make a specialty of concrete work. Mr. McEnteer was formerly connected with the Trussed Steel Concrete Company, Detroit, Mich., and Mr. Griffiths has been connected with mining and construction operations in the Northwest for several years.

Paul C. Kuegle, chief inspector of the Youngstown Sheet & Tube company, has resigned his position, to take effect October 1. He will sail from New York October 9, for Sakchi, India, via, Brus-

sels and Marseilles, where he will be employed as chief inspector of construction and general yardmaster for the Tata Iron & Steel Company, a review of whose plant appears in this issue of the Industrial World.

A. N. Frecker, sales manager for the Van Dorne Electric & Manufacturing Company, Cleveland, Ohio, was in Pittsburgh last week in the interest of his firm. Mr. Frecker states that his company has doubled the capacity of the plant during the last 60 days in order to take care of the orders received for electric drills.

John L. Connors, Western sales manager of the Ralston Steel Car Company, of Columbus, Ohio, has been transferred to the Columbus office, where he will serve as assistant to the president. F. E. Symons, who has been associated with Mr. Connors in the Chicago office, will succeed him as Western sales manager.

The Brown Engineering Company has opened an office at 410 Machesney building, Pittsburgh. The company will engage in all kinds of engineering and contracting work and will make a specialty of building construction, foundation and concrete work.

J. A. Eden, Jr., who has been identified with the forging machinery department of the E. W. Bliss Company, Brooklyn, N. Y., has resigned and takes a position as manager of a similar department for the United Engineering & Foundry Company, Pittsburgh.

The American Bridge Company has closed its office in Syracuse, N. Y., and added the central New York territory, formerly tributary to that office, to the jurisdiction of W. B. Ogram, contracting manager, with offices at Buffalo.

B. H. Behrens, sales manager for the Arthur Koppel Company, Pittsburgh, while riding a spirited horse last week, was thrown and sustained injuries which will prevent him from attending to his duties for another week.

The district sales managers of the Carnegie Steel Company and the Illinois Steel Company will hold their next quarterly meeting at Chicago, October 13, and the Gary plant of the Indiana Steel Company will be visited.

John J. Toole, until recently with the Union Steel Castings Company, Pittsburgh, has resigned to become foundry superintendent at the Sharon plant of the American Steel Foundries Company.

B. L. Verner has been appointed sales

manager of the Blue Island Car & Equipment Company, Chicago. Mr. Verner was formerly assistant purchasing agent for the Republic Iron & Steel Company.

FIRES AT INDUSTRIAL PLANTS.

Rochester, Pa. — Plant of S. Barnes Brick Company destroyed September 22; loss, \$20,000. Insurance of \$15,000 covers the loss. In the drying room were 30,000 green brick, all of which were destroyed. Ten large kilns, six of them full, were saved. The Barnes plant has had three fires in 24 years, the first in 1885, and the next in 1907. The stockholders decided to rebuild.

St. Louis Park, Minn. — Elevator owned by Exchange Grain Company, of Minneapolis, and warehouse of Pennsylvania Oil & Supply Company, destroyed September 17. Loss \$50,000.

Indianapolis, Ind. — Plant of Inglehart Milling Company, burned, causing a loss of \$250,000, only two-thirds of which is covered by insurance.

Texarcana, Ark. — Plant and stock of National Lumber & Creosoting Company destroyed September 20. Loss \$90,000. Insurance \$75,000.

Parkersburg, W. Va. — The lamp chimney factory at Salem, owned by Thomas F. McBride, burned September 22; loss \$3,000.

Monongahela, Pa. — Ellsworth Collieries Company's Ellsworth No. 2 tipple entirely destroyed September 20; loss \$50,000.

Pittsburgh, Pa. — Cooper shop of Morris Walsh Manufacturing Company, partially destroyed September 18; loss \$1,200.

Bath, Pa. — Machine shop and warehouse of Bath Foundry & Machine Company destroyed September 15. Loss \$15,000.

Evansville, Ind. — Flour mills and elevator of Inglehart Brothers, destroyed September 16. Loss \$200,000.

Showell, Md. — Mill and stove factory of C. C. Munford & Company damaged \$5,000 September 15.

Davenport, Ia. — Plant of Meter Motor Car Company, destroyed September 10. Loss \$48,000.

Austin, Tex. — Loss on Tips Foundry, \$50,000. Insurance \$15,000.

Try a Want or For Sale ad in the Industrial World.

International Society of Testing Materials

THE International Association of Testing Materials, at the close of its triennial session at Copenhagen on September 11, elected Dr. Charles B. Dudley, of Altoona, Pa., as its president for the coming three years. Dr. Dudley who is chief chemist of the Pennsylvania Railroad, is now president of the American Society for Testing Materials. The invitation extended by Dr. Dudley on behalf of the American Society for Testing Materials was accepted, and the next meeting of the International Association, which will be in 1912, will be held in New York, probably in the fall of the year.

The congress, which was the fifth of the International Association, was held under the patronage of his majesty, King Frederick VIII., of Denmark. The proceedings opened on Tuesday, September 7. The inauguration meeting took place in the Grand Hall of the University at 10 a. m., the crown prince, honorary president of the Congress, presiding.

On opening the meeting, the crown prince, speaking in French, stated that the question of material testing was a matter the importance of which had been fully recognized in every country, and the various departments of all States had undertaken tests with the object of perfecting the quality of the materials they used. The present International Congress, which was then entering upon its work, afforded a further proof of the solidarity that existed among nations; they were working in this matter, as in numerous others, in complete agreement.

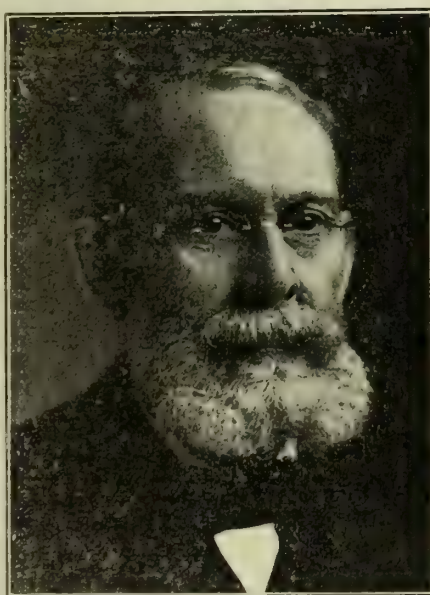
The president of the International Association, Alexander Foss, C. E., president of the Association of Danish Ironmasters, who followed, briefly stated the object of the Congress, this being to carry on discussions and exchange views, so as to arrive at an equalization of the methods of testing materials throughout the different countries. Progress under this head had already been accomplished, since the last, Brussels, meeting. The question of an international journal to further the cause they had at heart had been considered repeatedly; no decision had been arrived at so far, and the matter would have to be gone into again. He was glad to have to record an increase in the number of delegates, and viewed with pleasure the comparatively large increase in that of the English-speaking members.

The International Association had 2,160 members in May, 1909. Germany leads with 375, Russia follows with 293, and the United States is third with 290.

Austria has 219; Denmark, 155; France, 166; Great Britain, 96; Belgium and Hungary, 82 each; Switzerland, 83; Sweden, 71; Norway, 46; Holland, 42 and Italy, 60.

Danish Cement Industry.

The first day was occupied with papers and discussions in Section B, dealing with cement, stone and concrete. The opening speaker in this section was Poul Larsen, C. E., of the firm of F. L. Smith & Company, who read, in English, a paper on "The Development of the Danish Cement Industry." Owing to climatic and geological conditions, he said, Denmark depended upon agriculture as her principal trade. The industrial development of Denmark, therefore, would lie in the development of her agricultural products. There was in



Charles B. Dudley.

the country an absence of accessible minerals having a commercial value. Limestone, however, formed an exception, as it constituted the immediate subsoil of Denmark; it was easy of access generally, and appeared at the surface in many places. This occurrence of limestone gave rise to the cement industry in Denmark, which had been built up during the last 20 years, often under very difficult conditions, and without any support whatever from the State in the shape of a protective duty, or in any other way. In order to show the development of the Danish cement industry, Mr. Larsen said that in 1889 the total production was 115,000 barrels of Portland cement, the imports amounting to 135,000 barrels. In 1908 the total production was 1,560,000 barrels, of

which 1,110,000 barrels were sold in Denmark, and 410,000 barrels were exported, whereas the imports had decreased to less than 100,000 barrels.

The present capacity of the Danish cement factories was 2,600,000 barrels per annum, or more than twice the consumption of the country. The exports were to Sweden, Norway, Germany, Russia, Finland, England, South America, South Africa, and East India.

Denmark, unfortunately, was totally devoid of water-power and coal, and all fuel had to be imported from abroad. Notwithstanding this difficulty, the State had put an import duty on coal, and similar conditions ruled in regard to the material required for packing; on the other hand, foreign cement had always been imported free of duty. The Danish cement industry had, therefore, been handicapped by the State in the way shown down to June of last year, when the new Danish tariff was passed. At the present time, if the Danish cement works could cope with the competition from other countries, it was mainly owing to the advanced state of their technical development.

The Portland cement industry originated in Denmark in 1868, when two small factories were put down in Seeland, both of which, however, were closed about 20 years ago. The seven factories now existing were all in Northern Jutland, and were put down from 1873 to 1908. The author then dealt with the processes first followed, and with the improvements that were carried out from time to time. He stated that the Danish engineer, F. L. Smith, invented "sand cement," a mixture of sand and cement ground together to an impalpable powder, which showed remarkable strength, notwithstanding its large proportion of sand. He then referred to the "tube-mill," which did away with all sieves, led to a great saving of power, and was generally adopted. At the present time, he said, there were 1,391 tube-mills of Danish manufacture running in 108 factories in the States, in 328 factories in Europe, and in 21 in India, China, Japan, etc., taking about 75,000 horsepower, having an annual output calculated on Portland cement clinker of about 30 million tons, or 180 million barrels. He then alluded to the "comminuter" machine, invented by Poul Lindhard, a Danish engineer, to obtain fineness, and to the sifting system, the "Fasta sieves," invented by another Danish engineer, Mr. Fasting.

The rotary kiln was introduced in 1898. This, said the author, originated in England for cement-burning, but in England it never went beyond the trial period. The Americans gave it a suitable design for the cement industry; they had the advantage of crude oil,

and when this had increased in price they used slack coal, which led to the adoption of the kiln in Europe. Denmark took it up, improved it, and there are now 115 rotary kilns of the Danish improved type running in 63 cement works throughout Europe.

Manual labor in cement works in Denmark had now been reduced to about one-sixth of its former extent: where in 1897 there were 1,200 men required, only 200 were now employed. The fuel consumption per barrel of cement, using the rotary kiln, was now no higher than formerly with the continuous shaft kiln and tunnel-dryers. The first cost of a plant was less than half what it was formerly.

The sections of the Congress were so arranged that Section A dealt with metals, Section B with cement, stone, and concrete, and Section C with various other materials.

History of International Society.

London "Engineering," in connection with the meeting of the Congress at Copenhagen, gives this sketch of the International Association:

The name under which the organization was first known was the "International Association for the Unification of Methods of Testing." It was called into existence in the 'eighties by the late Professor Bauschinger, who had founded the Institute for Testing Building Materials connected with the Munich Polytechnic School, the proposal being to establish international conferences of scientists and representatives of works and companies, with a view to discuss the methods of testing followed in the different countries, and to unify these methods to the greatest possible extent.

One of the first results obtained by Professor Bauschinger's scheme was to bring into contact German and Austrian professional men, for the exchange of opinions in regard to the testing of materials for structural purposes, the testing covering both physical and chemical investigations. The first congress to have a somewhat extensive international character was that held at Zurich in 1895. It was attended by over 300 representatives from Switzerland, Germany, Austria-Hungary, France, Italy, Russia, Holland, Belgium, Norway, Sweden, Denmark, and Roumania. There were two British and four American delegates. On the death of Professor Bauschinger, Professor von Tetmayer, who had founded the Swiss Institute for Testing Structural Materials, was made president of the Association; he acted as chairman of the Zurich Congress.

The second congress took place in 1897, at Stockholm. It was attended by 360 members, there being five representatives from England, and four from the United States. The meetings were di-

vided into two sections, one dealing with metals, and the other with stone, cement, and other building material. In the interval between the Stockholm Congress and the third, which was held in 1901 at Budapest, the Association had been consolidated into a permanent organization, under the name which it now bears. The number of members present at the third (Budapest) Congress amounted to 500, by far the greater proportion being Continental delegates.

The next congress was to be held at St. Petersburg in 1904; owing, however, to the Russo-Japanese war, and to the death of Professor von Tetmayer, the meeting was postponed till 1906, and was held at Brussels from September 3 to

OBITUARY.

GEORGE CATLETT MARSHALL.

George Catlett Marshall, a well-known coal and coke operator and brick manufacturer, died September 22, at his home in Uniontown, Pa., of paralysis. He was an active Democratic politician and was one of the delegates to the national convention at Denver last year. Mr. Marshall was born in Kentucky in 1845. In April, 1869, he made a visit to Pittsburgh and became so interested in the iron manufacturing industry that a few months later he located in Dunbar, Pa., and assumed charge of the Dunbar Iron Company. Several years later Mr. Marshall and A. W. Bliss established a fire brick manufacturing plant at Dunbar, which they continued to operate for 20 years. In 1873 Messrs. Bliss and Marshall leased the Frost works, now the Percy mines and operated the plant for several years. Later, under the name of the Percy Mining Company they continued the mining of coal and the manufacture of coke. The company was incorporated a few years afterward, with Mr. Marshall as president and treasurer and A. W. Bliss, secretary. Mr. Bliss and Mr. Marshall have built in the aggregate about 3,000 coke ovens in Fayette county and were the pioneers in the development of the southern field of Connellsville coking coal. The two men purchased the Oliphant furnace in 1879, built 150 ovens, operated them for several years and sold the plant to the H. C. Frick Coke Company. They also bought the Henry W. Kyle, James Nixon and Mickey tracts of coal in Georges township, constructed 150 ovens there and subsequently sold that property to the Frick company. He was still largely interested in coke and coal when death ended his remarkably active career.

JAMES J. HAGERMAN.

James J. Hagerman, founder and president of the Milwaukee Iron Company

until its absorption by the Illinois Steel Company, and its consequent designation as the Bay View works of this corporation, died at Milan, Italy, on September 14, at the age of 72 years. Mr. Hagerman came to Milwaukee in 1865. In 1882 he was taken ill and went to Colorado Springs for his health. Here he developed the Mollie Gibson mine, an extensive silver property, which became famous as a producer. He built the Colorado Midland Railway. In 1895 he moved to New Mexico, where he built the Texas Valley railroad and the Pecos Irrigation Company's great canal. He went abroad with Mrs. Hagerman in July, 1908, and expected to return to America on September 26. One son, Herbert, is a former governor of New Mexico.

* * *

ABRAM W. COLTON.

Abram W. Colton, 76 years old, for many years president and general manager of the Lake Erie Transportation Company, died suddenly September 20, at his home in Toledo, O., from heart disease. He was born in Erie county, Ohio, in November, 1834. In 1847 he became a clerk in a Monroe store, and in 1849 removed to Toledo. He was employed by several railroads and other transportation companies. In 1874 he became manager of the Wabash Railway's freight vessels plying between Toledo and Buffalo. Mr. Colton was one of the organizers of the Lake Erie Transportation Company.

* * *

ORLANDO METCALF.

Orlando Metcalf, treasurer of the Verona Tool Works Company, died at his home in Pittsburgh, September 23, aged 69 years. He was born in Pittsburgh and started business in the historic Ft. Pitt foundry in 1858, when he with Jacob Paul organized the firm of Metcalf, Paul & Company. The concern later became the Verona Tool Works Company, with which he was actively connected at the time of his death. He was married in 1863 to Agnes McElroy. Mr. Metcalf gave generously to the poor and needy, but without ostentation.

* * *

ROBERT HOE.

Robert Hoe, aged 70 years, head of R. Hoe & Company, printing press manufacturers, of New York and London, died in London, September 22, after a short illness. Robert Hoe, while still a young man, succeeded his father, Robert H. Hoe, in the management of the printing press factory established by his grandfather. Besides being the principal owner of R. Hoe & Company, he was an extensive manufacturer of circular saws and saw bits.

An East Indian Iron and Steel Plant.

Tata Iron & Steel Company, Limited, Erects Extensive Establishment at Sakchi, Via Kalimati, B-N. Rwy., in Bengal, India.

AMERICAN engineers are much interested in the new plant of the firm of Tata, Sons & Company, Bombay, founded by the late manufacturer and merchant, Jamsetjee Tata, and now controlled by his sons. The firm organized and incorporated in 1907 the Tata Iron & Steel Company, limited, for the purpose of converting the raw materials of India into iron and steel products, for which the country offered an extensive and rapidly growing market.

The company is entirely an Indian enterprise, with a native Indian board of directors, and some seven thousand individual shareholders. The initial share capital is £1,545,000, sterling. The first chairman of the board of directors was D. J. Tata, who is also the head of the firm of Tata, Sons & Company, the agents of the Steel Company; since his absence in Europe, R. J. Tata, of the same firm, has been the chairman. The other members of the board are all native-born.

Robert Goss Wells, lately of the Youngstown Sheet & Tube Company, Youngstown, Ohio, is the general manager of the company. Mr. Wells assumed his new duties in January last, with headquarters at Sakchi.

Under the direction of the consulting engineer, C. P. Perin, of New York, extensive investigation of the natural resources of the central portion of India had been previously undertaken, resulting in securing for the new company of the following valuable deposits of raw materials:

The Iron Ore and Fuel.

In the States of Mayurbhanja, Orissa, distant about 200 miles from the port of Calcutta, three large beds of hematite iron ore have been discovered, of which only the one at Gurumaishini will at present be exploited. In this one locality, there are in sight some 20,000,000 tons of ore on various ridges, analyzing as follows:

Sundal Ridge	63.57	2.60	0.023	0.028
Rangamatia Ridge	59.20	4.10	0.014	0.087
Tuila Ridge (solid ore-body)	66.13	1.17	0.016	0.054
East of Rangamatia (solid mass)	67.60	.60	0.038	0.017

Gurumaishini is some 40 miles from the new works, and will be connected with the works by a broad-gauge railway, now being constructed by the Indian government. Two other deposits of similar character are located a few miles

beyond the present terminus of the new mineral railway. The company possesses also considerable deposits of iron ore at Dhullee, in the Raipur district. Though this ore is even richer, containing about 67 per cent of iron, while the phosphorus comes well within the Bessemer limit, the advantage in freight makes it advisable to begin exploitation in the Gurumaishini field.

The company has purchased a large area of coal-land in the eastern part of the Jherria field. The coal produces a hard, strong coke, suitable for metallurgical purposes, low in sulphur and having an average ash content of about 18 per cent. The coal property is about 100 miles from the works.

The company will have available flux of the blast furnaces, in two forms—calcite and dolomite. The company also owns manganese mines of considerable importance, in the neighborhood of Nagpur. The ore contains about 50 per cent managanese.

It can be stated, therefore, that the new steel company controls for practical purposes an unlimited supply of the four necessary raw materials: Iron ore, coking coal, flux and manganese ore. To utilize these, it was decided to construct an up-to-date iron and steel plant of a yearly capacity of 120,000 tons of foundry-iron, rails, shapes and merchant bars. The Indian government granted a special freight rate of .15d per ton-mile for raw materials, supplies and finished products. They placed with the new company an order for 200,000 tons of rails, for periodical delivery, and undertook to construct a broad-gauge railway to connect the works with the Mayurbhanja iron ore mines. Twenty-three square miles of land were secured, partly in fee and partly on long lease, the land being located alongside of the Bengal Nagpur railway, near Kalimati, 152 miles west from Calcutta. At this point the combined freight charges for raw materials, supplies and export products

Iron	Silica	Sulphur	Phos's.
63.57	2.60	0.023	0.028
59.20	4.10	0.014	0.087
66.13	1.17	0.016	0.054
67.60	.60	0.038	0.017

were found to be the most advantageous. The climate at the site is healthy. The elevation of the works is about 535 feet above sea-level, and the natural drainage is perfect. The ground for foundations consists of impervious and

fire-proof mica chist, uniformly found at a depth of from four to six feet below the surface. The property is bounded on the north and west by the Subernarekha and Kharkhai rivers, from which a sufficient supply of water is obtained. A concrete pier, about 1,200 feet long, has been thrown across the former river, and a reservoir 47 feet deep, with an area of about 60 acres, is now being constructed, into which water will be delivered from the river pumping-station through a 30-inch welded steel pipe 9,300 feet in length. A town, arranged for a population of 20,000 Europeans and Indians, is being constructed. More than 100 bungalows are now under roof or above ground. The town and works sites are connected with the Bengal-Nagpur railway by a broad-gauge (5-foot 6-inch) railway three miles long. Large receiving-yards are being constructed at Kalimati by the railroad.

Designed by a Pittsburgher.

Messrs. Julian Kennedy, Sahlin & Company, limited, of Pittsburgh and Brussels, have been engaged as constructing engineers and designers for the works, which are shown by the accompanying illustration. This plant is being planned in the most substantial and durable manner, and with due regard to the progress of the art and to the necessity of furnishing a simple and easily-worked installation for this new and distant industrial territory.

The coke-oven plant consists of 180 non-by-product coke ovens, fitted with a coal breaking and crushing plant for a capacity of 700 tons per 10 hours, coal storage bin, electric charging larries and electrically-driven coke pushers and levellers. The coke is carried on steel trucks from the coke ovens to the blast furnace charging pockets.

The blast furnace plant consists of two blast furnaces 19 feet in diameter by 77 feet high, each equipped with inclined double skip hoist, automatic stock pockets served by electric charging larries, four 22 feet by 90 feet central combustion chamber Cowper-Kennedy hot blast stoves, dust-catchers and centrifugal gas cleaners. The iron can either be run liquid into ladles, or cast into pigs. The slag is removed in self-emptying slag cars.

The available gas from the blast furnaces, supplemented by hand coal-firing, will be used in a central boiler plant,

consisting of 8,000 horsepower Babcock & Wilcox boilers.

Each blast furnace will be blown by one out of three Zoelly type turbo-blowers, having a capacity of 30,000 atmospheric cubic feet of blast per minute against a pressure of 18 pounds per square inch. The turbo-blowers are equipped with separate surface condensers.

The electric power plant consists of three 1,000-kilowatt turbo-generators, direct-coupled to Zoelly type turbines, with surface condensers. The dynamos generate three-phase current, 3,000 volts, 50 periods. Part of this energy is transformed by two motor generators into 250-volt direct current, to be used for cranes and in the rolling mill plant.

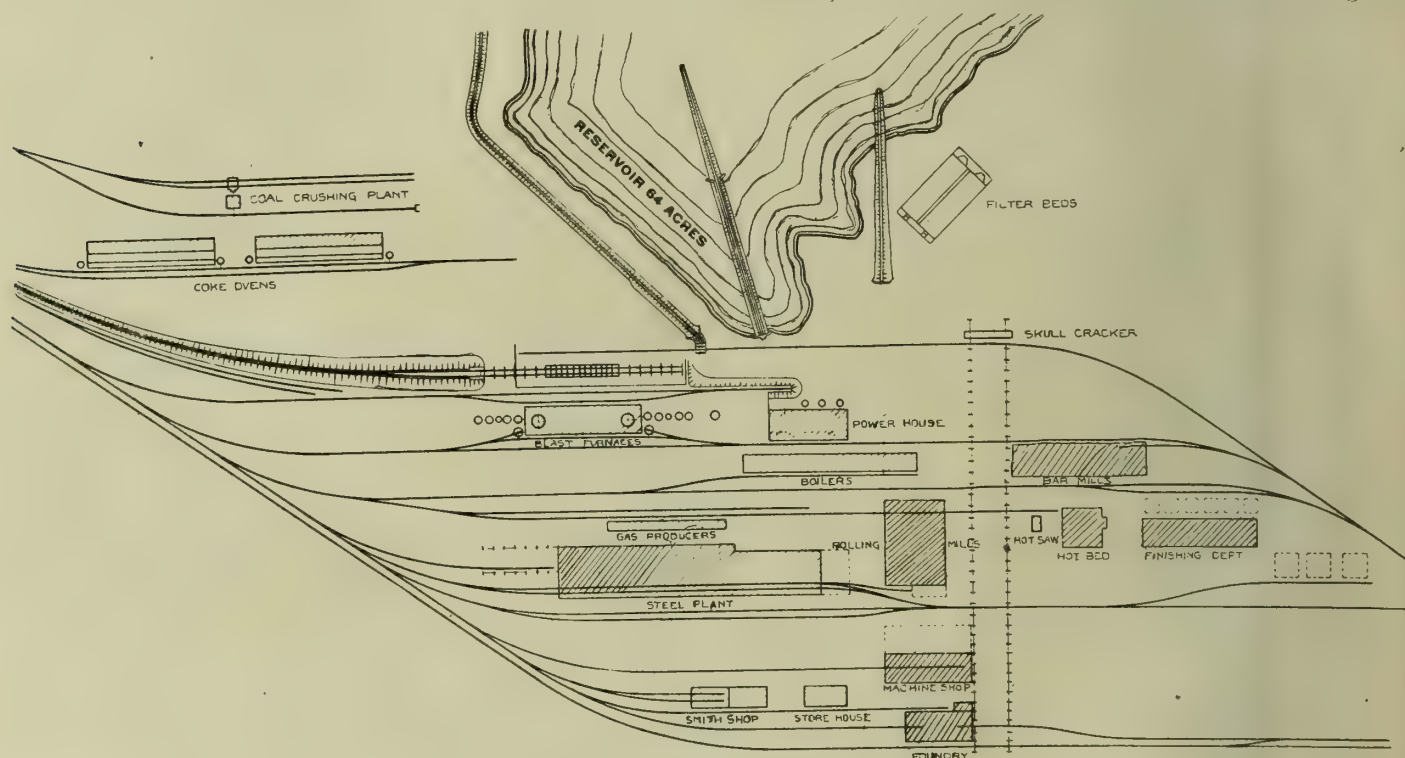
ing pits. All the furnaces are equipped with Dyblie water-cooled reversing valves. The metal is brought in ladles from the blast furnace plant, and is poured into the mixer by one of the two 75-ton casting cranes. The ingots are cast in molds standing on trucks. At the east end of the steel plant is located a stock yard covered by a 10-ton traveling crane running on trestles. All cold stock is charged into the furnace by a charging-machine running on an overhead runway. The ingot molds are stripped and charged into the soaking pits by special charging and drawing machines suspended from crane bridges.

On a line parallel with the furnace building, is located a plant of 16 Morgan mechanical gas producers, with re-

ings. The steel blooming rolls have a length of 80 inches, with a diameter of 33 inches; they are served by tables with 18-inch diameter steel rollers, and by a hydraulic manipulator. The shear is of the steam hydraulic type, with both knives moveable. The upper knife is dropped by gravity upon the bloom, and held in position while the lower knife does the cutting. The blooms are transported directly by an overhead charger from the shear table to the rail mill table, or to a reheating furnace placed in the mill building, and fired with gas from the general producer plant.

Rail Mill, Foundry and Shops.

At the opposite side of the engine, and connected by a hydraulic coupling similar to the one for the blooming mill,



Plan of the Tata Plant.

Another part is cut down by stationary transformers to a tension of 440 volts, and distributed throughout the works. Still another part is carried at high tension to the river pumping station, about two miles from the works.

The pumping plant consists throughout of centrifugal type pumps for the distribution of water throughout the works, for hydraulic pressure, boiler feed, filters and town service. The whole of the blowing, generating and pumping machinery is concentrated in one central power plant, located alongside the boiler plant.

Steel Plant and Rolling Mill.

The steel plant is located in a building 650 feet by 135 feet, containing one 300-ton gas-fired mixer resting in cradles; four 40-ton basic open hearth furnaces, and three five-hole gas-fired soak-

ing bottom, hearth and tuyere. The producers are equipped with George patent automatic revolving reeds. Each furnace is fired independently by the necessary number of producers.

The heated ingots are carried from the soaking pits in an electrically-driven tilting-chair, which conveys them to the rolling mill building, measuring 216 feet by 150 feet. In this building is placed an Ehrhardt & Schmer three-cylinder reversing engine, non-condensing, with cylinders $51\frac{3}{8}$ by $51\frac{3}{8}$ inches. On one side of this engine, and connected to it by a hydraulic coupling, is a blooming mill, which is a duplicate of the blooming mill of the Youngstown Sheet & Tube Company, at Youngstown, Ohio. The pinions, which have a diameter of 40 inches, are made of forged steel, and run in oil in hermetically-closed hous-

ings. The steel blooming rolls have a length of 80 inches, with a diameter of 33 inches; they are served by tables with 18-inch diameter steel rollers, and by a hydraulic manipulator. The shear is of the steam hydraulic type, with both knives moveable. The upper knife is dropped by gravity upon the bloom, and held in position while the lower knife does the cutting. The blooms are transported directly by an overhead charger from the shear table to the rail mill table, or to a reheating furnace placed in the mill building, and fired with gas from the general producer plant.

Behind the saw the cut bars pass over a section of rollers equipped with tilting mechanism, by which the are placed on their flanges before they are delivered upon the double cooling bed, measuring 72 feet by 80 feet.

From the cooling bed the bars are passed through a roll straightening ma-

chine, and delivered into the finishing department, which contains the usual machinery for finishing rails and beams and which is commanded by a 10-ton traveling crane. The rails or bars are finally placed on the inspection beds, located alongside of the finishing shed.

Between the mill building and the hot shear building, crossing all the railway tracks in the works, is an elevated crane runway, 1,037 feet long, with a span of 85 feet, forming an ample and accessible yard for stock and materials of every description. This yard is commanded by a 10-ton traveling crane. At one end of the yard is placed an electrically-driven skull cracker.

Alongside of the stock yard is placed a machine shop, 216 feet by 72 feet, commanded by a 30-ton traveling crane, with a five-ton auxiliary hoist, and containing the equipment of tools usual for iron and steel works—roll turning lathes, large and small machine lathes, horizontal and vertical boring mills, planers and

placed due east and west, with protected gables and open north and south elevations. This will, in the latitude of Sakchi (Kalimati), where the declination of the sun from its zenith is 30 minutes north at midsummer, and 42 degrees south in mid-winter, procure continuous shade in the interior, and at the same time free circulation of air. The building frames are of steel and of heavy design, so as to withstand the occasional tropical storms. The columns are not less than 34 feet high. The roofs and walls are of corrugated puddled iron sheets.

The railway system in the works consists of about eight miles of 5-foot 6-inch gauge tracks, laid with 75-pound per yard standard Italian flanged rails resting on Saalwood ties. The rolling stock consists of four six-wheeled yard locomotives weighing 45 tons, with separate low back shifting tenders; also the trucks necessary for handling hot metal, slag, waste material, ingots, blooms and pig iron. There are also two traveling

pany, (Lahmeyer), Zurich and Frankfurt.

Electric motors and accessories—Allgemeine Elektrizitaets Gesellschaft, Berlin.

Pumps—Sulzer Freres, Winterthur.

Thirty-inch steel water mains—Thyssen & Company, Muelheim a. d. Ruhr, Germany.

Blooming and rail mills—Duisburger Maschinenbau A-G., vormals Bechen & Keetman, Duisburg, Germany.

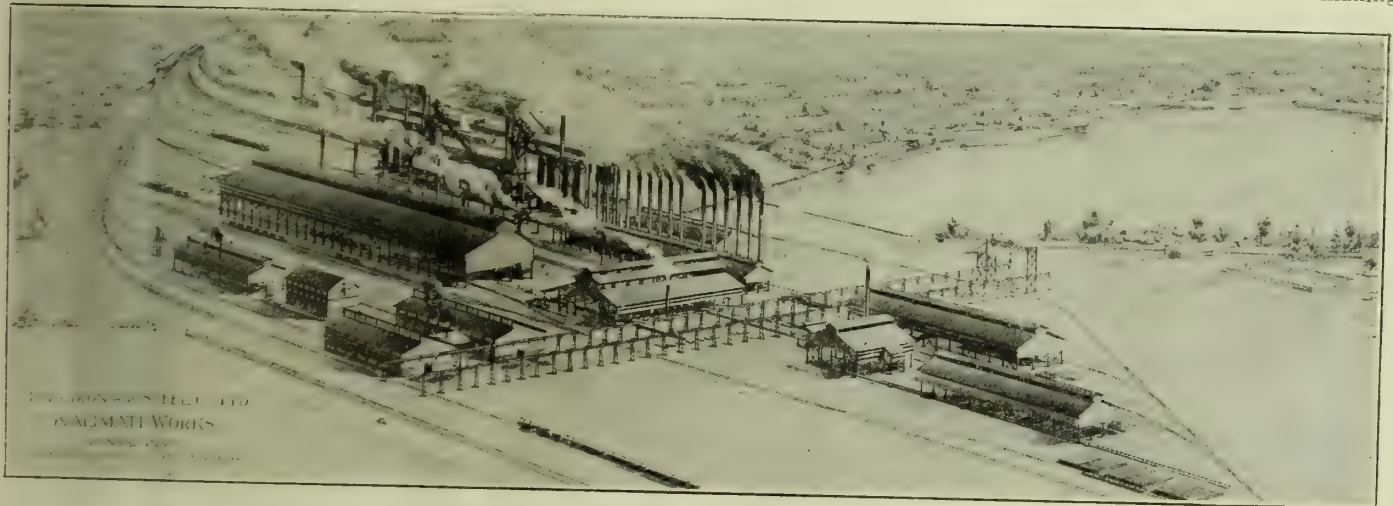
Rolling mill engine—Ehrhardt & Seimer, G. m. b. H., Saarbrücken, Germany.

Electric traveling cranes—Maerkische Maschinenbauanstalt Ludwig Stuckenhols A. G., Weter a. d. Ruhr, Germany.

Fire brick—Glenboig Union Fireclay Company, limited, Glasgow; and Harper & Moores, limited, Stourbridge.

A branch railway from Kalimati Station of the Bengal-Nagpur railway to the works site is completed and the foundations for the blast furnaces, steel mill and the principal buildings are under way. The erection of the mill buildings has commenced.

The Tata Iron & Steel Company will not be pioneers in iron and steel making



Birds-eye View of New Bengal Works, First Complete Steel Plant in East India.

shapers, drill presses, wheel presses, erecting plates and tool-room equipment.

Contiguous to the machine-shop is placed a foundry, 192 feet by 72 feet, equipped with two cupolas driven by electrically driven rotary blowers, core-ovens, brass furnaces and the usual equipment.

Conveniently located to the foundry and machine shop, is placed a three-story fire-proof brick and steel building. The two lower floors are used for stores, and the top floor for pattern shop and storage.

At the rear end of the above building is located a steel hammer, with heating furnace, blacksmith's fires, and the necessary equipment; also boiler shop equipment, consisting of punchers, shears, drills and plate bending machine. At one end of the building is provided shed room for four locomotives.

The mill buildings throughout are

steam cranes of six tons' capacity capable of being used for light shunting.

Adjacent to the shops and steel plant will be placed a brick building containing testing machines and physical and chemical laboratories.

Some of the principal contracts for the new plant have been placed with the following firms:

Cement—Rheinisch-Westfaelisches Cement-Syndikat, G. m. b. H., Bremen.

Rails—Bolckow, Vaughan & Company, limited, London.

Locomotives—American Locomotive Company, Allegheny Works, Pittsburgh.

Trucks—Arthur Koppel, Soc. Anon., Brussels.

Boilers—Babcock & Wilcox, limited, London.

Coke ovens—Evence Coppes, Brussels.

Steel buildings—A. & J. Main Company, limited, Glasgow and Calcutta.

Iron and steel work for blast furnaces, mixer and steel heating furnaces—August Kloeene, Dortmund, Germany.

Turbo-blowers, turbo-generators and transformers—Escher, Wyss & Com-

in India. An iron manufacture of a primitive kind, and formerly of considerable extent, has been carried on by the natives during many centuries. More recently, the Bengal Iron & Steel Company, for a number of years, have successfully operated two (at times three) blast furnaces at Barrakar, distant about 110 miles from Kalimati, producing foundry iron. The Indian government are operating an open-hearth furnace, and the East Indian Railway Company are rolling old rails into merchant bars, on a small scale. Though none of these enterprises equals in size the new Tata installation, they have served to demonstrate that iron and steel can be produced and rolled in India, and the abundant supply of raw materials which are at the disposal of the Tata Iron & Steel Company, combined with an expanding market for their products, are two important factors which should insure the success of the enterprise.

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PITTSBURGH, PA., SEPT. 27, 1909.

THE FLIGHT OF THE COKE MARKET.

CONNELLSVILLE coke has been exhibiting one of its most spectacular flights in the past two weeks. Consumers have freely paid \$2.75 for nearby delivery, while contracts at \$2.90 have been made for delivery over 1910, with every prospect that \$3 will be reached for next year.

The present year opened with an agreement on the part of some 50 operators to maintain \$1.75, but it is related that within a couple of hours of the adjournment of the meeting one operator had sold at \$1.60. He knew his associates, and acted promptly. The agreement soon disappeared altogether and in April and May the lowest prices of the year were made. For a while there was no difficulty in buying regular supplies of furnace coke at \$1.50, while odd lots sold down to about \$1.35, and contracts for second half could be made at \$1.60.

Thus the advance in coke, whether prompt or contract, has been \$1.30 to \$1.40, and the greater part of the advance has been accomplished in the past three or four weeks.

The present prices are high, historically considered, as will be seen from the following table taken from the Courier reports. The annual average is supposed to cover foundry as well as furnace coke, and to allow for the occasional high prices obtained for prompt deliveries when coke is scarce. What the average for 1910 will be no one can

tell, but this can be said, that if the market makes good, sales at the present time at \$2.90 for furnace coke, with \$3 expected, would mean an average for the year of \$3.25 or higher for the entire output of the Connellsville region, and it is with about \$3.25 that the following prices should, therefore, be compared; the table starts with the lowest average price on record:

1894	\$1.00
1895	1.23
1896	1.90
1897	1.65
1898	1.55
1899	2.00
1900	2.70
1901	1.95
1902	2.37
1903	3.00
1904	1.75
1905	2.26
1906	2.75
1907	2.90
1908	1.80

The \$3.00 average in 1903 is the highest on record, but the market was under somewhat unusual conditions in that year. In 1907 conditions were more normal, that year showing the next highest average in the table. If a parallel to present market conditions is to be found at all, it is to be found in the conditions surrounding the coke market for 1907. The movement in 1907 contracts opened about October 1, 1906. There was heavy inquiry, and buyers were met by a quotation of \$2.75. Some of them bought; others considered the price too high. The market ran along for a fortnight, and the H. C. Frick Coke Company suddenly appeared as a buyer. It bought at various prices, having to use all the acumen it could command in order to avoid having the market run away. It took some large lots and allowed some smaller lots, offered at less money, to go by. On the average, its purchases were understood to have been at \$2.90 for the first half of 1907 and at \$3.00 for the second half, the latter transactions, therefore, being equivalent to paying \$3.10 for the second half, or 20 cents premium over the first half. Later in October belated buyers came in, some of them paying as high as \$3.15.

The market for 1910 starts off at a higher level than did the market for 1907, and the question most seriously agitating the minds of consumers is whether it will end higher or lower than it began.

Coke producers insist that this is a new era; that the consumptive capacity of the region tributary to Connellsville coke has increased more, since 1907, than has the productive capacity of the region. They are intensely bullish.

The advance in Connellsville coke is not without its humorous aspect. It will be recalled that last spring an effort

was made to consolidate the independent properties in the Connellsville region. Options were secured on practically a cash basis, and the promoters insisted that the merger would go through. It developed that some of the options were at high prices, as much as \$5,500 per acre for the coal land, exclusive of other assets. Some of the options were reputed to be at even higher figures, although not many. It was believed in many quarters that the average option price of the coal lands was close to \$5,000 an acre, although the promoters denied this. There was reason to suspect that the denial was based largely upon the fact that some coal lands outside the region, at much lower valuations, were figured into the average. However, that may be, there was a widespread belief that the merger could not be put through, and the sole proof adduced was the fact that to pay interest on the capitalization and provide for depreciation it would be necessary to make a profit of nearly a dollar a ton. One computation, assuming \$5,000 per acre and exhaustion in 15 years, put the amount at 94 cents.

These computations were supposed to be ample proof that the merger could not be put through, the assumption being that even a merger which would eliminate competition between producers of Connellsville coke would still experience such competition, in the long run, from other fields, that it could not advance the price enough to clear a dollar a ton.

The average cost of making Connellsville coke, without carrying a fund against exhaustion, may be put very liberally at \$1.40 a ton. The present market for next year's furnace coke is \$2.90, \$1.50 more. There, before the options have actually expired, is 50 per cent more than the proposed merger seemed to need.

The actual capacity of the Connellsville region for coke production cannot be estimated closely. The real capacity is not represented by the number of ovens in existence, because on account of the exhaustion or partial exhaustion of many of the mines all the ovens cannot obtain coal. On the other hand, the actual capacity is not represented by the number of ovens at present in operation, for the reason that labor is scarce and with more labor more ovens could be operated.

There are about 38,500 coke ovens in existence in the Connellsville and lower Connellsville region, of which about 32,500 have been in operation this month. There are about 1,500 ovens whose coal seams are totally worked out. These ovens could not be operated except with shipped coal, an utter impossibility with the present scant labor supply. Then

there are plants whose mines are partly worked out and which cannot furnish sufficient coal to operate the entire plants. Where there are 400 ovens, perhaps only 200 or 300 can be operated. This condition may cut out another 1,500 ovens. This would leave, perhaps, 3,000 ovens which could be put in operation with an adequate labor supply. They would produce about 40,000 tons of coke a week. The ovens already in operation are in some cases not making their full output, by reason of insufficient labor and with a full supply they might make more coke, so that altogether a fair estimate seems to be that with sufficient labor the region could produce about 50,000 tons a week more than it has been producing. The Courier reports have shown an average of about 420,000 tons a week produced thus far this month. The best output ever made (in 1907) was about 430,000 tons a week. There has been an increase of nearly 4,000 ovens since then, but the increase in capacity is not in the same proportion, as more ovens are on the shelf, through exhaustion of their coal reserves.

The actual capacity of the region, doubtless, lies between 450,000 and 475,000 tons a week, probably nearer the upper than the lower limit, but to reach that output will require a large influx of labor, which is not in sight. The supply lately has increased but little, measured by actual results. The men are migratory, and the best results are not being obtained from them. The near future promises an improvement, but probably not enough to take care of the blast furnaces and foundries if they find it necessary to run full the coming winter and spring.

TONNAGE PROSPECTS OF THE IRON TRADE.

PREDICTIONS are freely made that the pig iron output of the United States in 1910 will reach 30,000,000 tons. This, compared with the previous record for a calendar year, 25,781,361 tons in 1907, would show an increase of more than 4,000,000 tons. That record, however, did not represent the actual gait the iron trade traveled during the first 10 months of that year, as there was a severe slump in production in the two closing months. The output in the 12 months ending October 31, 1907, was approximately 27,150,000 tons, and that stands as the record for 12 consecutive months. The accident of the calendar should not prevent the fact from being recognized. The gain from that record would be less than 3,000,000 tons.

The industry will have no difficulty in making 30,000,000 tons of pig iron in a calendar year. At the close of 1907 the country's capacity was easily 28,000,

000 tons a year, and new furnaces blown in since then have easily brought the capacity to 30,000,000 tons. For a year these furnaces could do better than 30,000,000 tons. At the close of 1907 the furnaces had been under pressure for three years, and many furnaces had been playing out, requiring stoppage for relining and other repairs. At the present time furnaces have been put in good condition, repairs being anticipated wherever possible, so that production can for a time exceed the normal.

Then there are furnaces still being built, which will be completed within the next six or eight months, which should bring the available capacity to 32,500,000 tons at the least. Were the demand sufficient, and raw materials could be found, there is practically no doubt that the furnaces could make 32,000,000 tons of pig iron in the next calendar year.

In times of pressure the question is frequently asked "Where is the iron going?" Even the experience of last summer showed that certain lines were sure to break previous tonnage records. While the output of rails, plates and shapes lagged far behind previous records, some lines of finished steel were already showing tonnages beyond previous records.

OUR RETROSPECT.

CHARCOAL pig iron for the manufacture of Bessemer steel rails sounds rather odd in these days, yet in our issue of an even 20 years ago, September 27, 1889, there is an editorial on "the past and future of charcoal iron in the United States" in which it is said: "Certain railroads still insist that some charcoal iron shall enter into the manufacture of Bessemer steel rails which they use." It is observed that it seems hardly creditable that less than 50 years earlier all the pig iron made in the country was charcoal iron, "yet it is true that up to 1840 no other fuel was used in the blast furnace." Incidentally, the census report for 1840 is quoted, to the effect that there were some 804 blast furnaces in the United States, which produced 286,903 tons of "cast iron." Net tons are undoubtedly indicated. There are only about 470 blast furnaces in the United States to-day, but many of them can make two-thirds as much iron as the whole 804 made in 1840.

A high point in charcoal pig iron production was reached in 1882, when 623,130 gross tons were produced. Then there was quite a decline, but a new high point, the highest in all history, was reached in 1890, with 628,145 tons. Production then dwindled to 222,422 tons in 1894, the low point since 1864, but an increase to 505,684 tons occurred

in 1903. In 1907, 437,397 tons were made and in 1908, 249,146 tons.

The editor makes some prognostications in this issue of 20 years ago:

"As to the future of charcoal iron: As is noted above, the chief demand for charcoal iron at the present moment is for car wheels and malleable iron castings. Beyond any doubt this demand will continue a large one for some years to come, but there is no disguising the fact that steel made from irons other than charcoal is rapidly encroaching upon charcoal iron even for these purposes. We do not mean, of course, that steel will make malleable castings, but that steel castings are taking the place of malleables for many purposes, and that steel wheels are supplanting, and must still more rapidly supplant, chilled car wheels in the near future."

The editor made some pretty good guesses, but he did not realize that charcoal iron was not an essential constituent of malleable iron castings, which are now made chiefly with what is erroneously called "malleable Bessemer." Of course, it is not Bessemer, but it is not charcoal. As to the steel wheel, it is still pretty much in its infancy. The editor's concluding words prove to have been well chosen: "What we mean to indicate is that for the two purposes—fine castings and car wheels—charcoal iron will not hold in the future the undisputed place that it has in the past."

Spreads in the Pittsburgh pig iron market have gone back to first principles. Bessemer is \$18, valley, and No. 2 foundry \$16.50. The spread is much larger than has prevailed of late, but in this issue of 20 years ago we find the following quotations at Pittsburgh:

No. 1 foundry, native ore..	\$16.75..	\$17.25
No. 1 foundry, lake ore....	17.00..	17.50
Bessemer	18.00..	18.25

Averaging the above quotations and allowing for the difference between No. 1 and No. 2 foundry, we have in the above table substantially the present spread.

In the advertising columns of this issue of 20 years ago we find some pretty nice "Bessemer pig iron" advertised, one brand, "Acme," being guaranteed not exceeding .03 per cent in phosphorus, with "Special Acme," guaranteed not exceeding .02 per cent in phosphorus. These brands were made at a blast furnace in Norristown, chiefly from imported ores. The furnace became inactive in 1893, and was dismantled about 10 years ago.

New Railway Shops in Japan.

The Jiji Shimpō, of Tokyo, reports that the railway bureau is to establish a factory and repair shop near Sapporo, Hokkaido, Japan, for the purpose of making and repairing cars on that island.

Market Conditions, Prices in Producing and Buying Centers

Iron Market Still Rising; New Sheet Prices Announced.

PITTSBURGH—A rush of the larger steel interests for Bessemer iron forced that grade to lead the iron market in Pittsburgh in another solid advance of 50 cents during the week just ended. Bessemer closed the week firmly fixed at \$18, Valleys, for immediate deliveries, after almost duplicating, day by day, the program of the week before when it advanced from \$17 to \$17.50 in five days' sales.

The sensational antics of the Connellsville coke market assisted in this rise, though the demand for the iron itself, and a rumored shortage of stocks in furnace yards, was enough to justify the price increase. Early in the week sales of a good tonnage were made for the first quarter of 1910 at \$18, Valleys, but this price was practically withdrawn by Friday, and \$18.50 was the minimum at which any Bessemer could be secured for next year.

It was said Saturday that only dire necessity will now drive the Steel Corporation into the open market for Bessemer, in the present situation. It is predicted that, at the present rate the Corporation's mills are running, its own furnaces will fall short keeping up its raw material supply by the middle of next month; but till that time comes, news of any purchase in the present market by the combine need not be expected. The closing of a deal for 50,000 tons of Bessemer by the Steel Corporation just now would, according to general opinion, precipitate a clean jump of \$1 in prices, and the Steel Corporation does not want a runaway market in iron.

Sales by the W. P. Snyder interest alone in the Pittsburgh market for the week ended Saturday totalled 50,000 tons of Bessemer. Pittsburgh has seen 140,000 tons of Bessemer change hands since September 1 and there were predictions Saturday that the month's total sales here would touch the 200,000-ton mark. Inquiries from several large steel interests are still pending.

Bessemer's new high price was set by the sale on Thursday of 3,000 tons to a local interest by Snyder & Company, at \$18, Valleys, for fourth quarter delivery. Early in the week, the last sale thus far reported had been made, for the first quarter of 1910—\$18. This could not be duplicated; and it is doubtful if the furnaces would accept a very large tonnage just at present for the first half of 1910 even at \$18.50. There was much talk of \$20 pig iron to be heard all week.

The Lackawanna Steel Company was the first to pay the \$17.50 price for Bessemer after the \$17 figure had been withdrawn—buying 20,000 tons, as noted in this report last week. The company was in the market for 45,000 tons, but arranged for the other 25,000 tons with an Eastern interest on a conversion deal. Followed, in rapid succession, the purchase of 10,000 tons by the Republic Iron & Steel, 3,000 tons by the Midvale Steel, 15,000 tons by an Ohio interest, and several scattering sales, all at the \$17.50 price.

Interest in basic and foundry irons, which had been lagging, was stimulated by the sale to a Pittsburgh interest of a round tonnage of foundry and forge running into next year, and by extended inquiries for both basic and foundry iron for 1910. The local concern bought 12,000 tons of No. 2 foundry and forge, the No. 2 for fourth quarter bringing \$16 and \$16.50; for first quarter of next year, \$17. The forge iron included in the purchase ran about 75 cents under these figures. The Westinghouse interests, including the Electric, the Airbrake and the Machine, also went into the market with an inquiry for Bessemer, foundry and forge, aggregating probably 10,000 tons, for delivery beginning January 1. The proposals on this lot closed September 24. One lot of No. 2 foundry for first quarter, from a furnace East of Pittsburgh was offered during the week at \$17, furnace, for first quarter, and \$17.50 furnace, for first half; the freight rate to Pittsburgh being higher than from Valley furnaces. Foundry ruled during the week, however, at \$16.50 for prompt and \$17, Valleys, for 1910. Actual sales of basic were light for present delivery, prices still ruling around \$16, though this figure was undoubtedly low, and some furnaces were refusing offers under \$16.25. As an indication of how chary furnaces are of quoting basic for 1910 delivery, it is related that one concern which wants 1,500 tons for first quarter has had its inquiries out a week, and has succeeded in getting only one quotation. Many makers have declared they would sell no more basic for this year at \$16, because of the apparent disparity between that grade and Bessemer. All the users seem to have requirements well covered for the present year, however.

A good lot of malleable changed hands during the latter part of the week, one sale reported being to a local concern for 1,200 tons for the fourth quarter at \$16.25; while another lot of higher grade iron went at \$17 for prompt delivery. A 600-ton shipment, on a special order,

brought \$17.25 for prompt and \$18 for next year. All told, probably 5,000 tons of high-grade malleable irons changed hands in the Pittsburgh market during the week.

The extraordinary conditions in the coke market still interested men in the iron business scarcely less than the extraordinary demand for Bessemer iron. The last of the week saw furnace coke quoted all the way from \$2.60 to \$2.80 for prompt delivery. Ruling prices wobbled from \$2.65 to \$2.75, with more tonnage sold at the latter figure than at the former. One local interest closed a contract for 15,000 tons a month, to run through the whole of 1910, at \$2.90, Connellsville, for the first half, with a provisional option on the second half. W. P. Snyder & Company sold 120,000 tons for 1910 to a local interest, subject to a sliding scale regulation. Offers of \$2.85 for first quarter of next year have been refused by coke makers, on the furnace grade, and Connellsville is confidently predicting that \$3 coke will rule for next year. In foundry coke, quotations for immediate delivery range from \$2.70 to \$2.80 for prompt and \$3 for next year.

In finished product lines, the week's most important development was an advance of \$1 a ton, announced by the American Sheet & Tin Plate Company, on blue annealed sheets. Independents led in this advance a week or two since, and simultaneously with the combine announcement came an increase by a number of independents of \$1 on black and \$2 on galvanized sheets. The American's new price scale on blue annealed is: Nos. 3 to 8, 1.65c; Nos. 9 and 10, 1.70c; Nos. 11 and 12, 1.75c; Nos. 13 and 14, 1.80c; Nos. 15 and 16, 1.90c. The independents generally are holding galvanized at 2.35c for No. 12. On account of the increasing demand, preparations were complete during the week by the combine to put on additional mills at its plants west of Pittsburgh—notably at Sharon, Pa., Dresden and Canton, O. The combine will furnish about 800 tons of heavy roofing sheets for a new manufacturing plant at Niles, O., and other orders from builders have thrown both the leading interest and the independents back 60 days or more in their deliveries.

The market in steel bars and billets became still more congested during the week. Every effort is being made to get the full capacity from the steel mills, but reports from the Carnegie, as well as the Republic, the Jones & Laughlin and other independent interests indicate that all plants in Pittsburgh district are from 60 to 90 days behind on delivery of ton-

nages on their books for this year. Some plate and shape mills are as much as four months behind. During the week 2,000 tons of forging billets sold to a Pittsburgh consumer at \$29, Pittsburgh. Open-hearth billets easily command \$27, some mills refusing to quote for immediate delivery. Some of the independents still refuse to follow the Carnegie Steel Company's example in its rate card changes on steel bars, the Republic Iron & Steel still adhering to its old card plan.

Steel and iron pipe makers received orders during the week which seem to indicate that the mills will be unable to take care of the business they will be offered between now and the first of the year—notwithstanding the tremendous capacity to which the National Tube has been pushing its plants. The McKeesport plant will break all records for pipe making during the present month. The decision just announced in Oklahoma, restraining the State officials from enforcing the constitutional amendment under which it was attempted to forbid the piping of gas out of the State, is taken to mean immediate activity in pipe line construction on projected enterprises in Oklahoma and Kansas. Large business is reported from the west by the United States Cast Iron Pipe & Foundry Company, including a 5,000-ton order from West Seattle. Awards are pending for 25,000 tons of cast iron pipe in the South. The leading cast iron pipe interests still is a large inquirer in the market for pipe making irons, although a part of its wants were filled in Cincinnati during the week.

The steel rail situation as regards Pittsburgh is unchanged, the Carnegie mills still being operated much below capacity, and the rail orders for next year's delivery by Eastern roads not having made their appearance. Scattering orders were reported, but not sufficient to increase mill operations, though large Eastern orders for standard sections are still pending.

Prices in wire and nails are being well adhered to. Nails are firm at \$1.80, while the price of \$1.70 on spikes cannot be shaved. All finished lines are filled up above what the trade in general has been expecting for this season.

Structural lines show no lagging from the pace set during August, though less large contracts have been reported during the past two weeks. The American Bridge Company took the contract for a Houston, Tex., terminal station, 1,200 tons. The Jones & Laughlin Steel Company will furnish the steel, 650 tons, for a mill building at Lawrence, Mass. The Riter-Conley Company took the Upson Nut Company contract, Cleveland, 1,000 tons. The city of St. Louis will shortly be in the market for 12,000

tons for the new free Mississippi river bridge there, and the Baltimore & Ohio has specifications out on 1,900 tons of bridge work. All bids on the 1,500-ton contract for the new Chicago baseball grandstand have been rejected, and the plans are to be revised. Much structural work is being held up in the mills, and other contracts would be made if prompt deliveries could be assured, but the steel companies are falling further and further behind. As a result of delays on some contracts, it is said builders are permitting the change of specifications to Bessemer instead of open hearth steel.

The market on iron and steel scrap continues firm, with prices higher than 10 days ago. The minimum on heavy steel scrap may still be quoted at \$17.50, though one dealer offered \$17.75 for a considerable tonnage during the week, and says he did not get enough to cover his needs. Steel borings have gone to \$11.25, and No. 1 cast to \$16.50. In ferromanganese and silicon, there is no change from conditions reported a week ago.

Prices at Tidewater

May Invite Foreign Pig Iron.

NEW YORK—An effort on the part of some of the largest producers in the East to advance No. 2X foundry irons to \$18.50 for this year's delivery, seems to offer an invitation for the beginning of a threatened invasion of foreign iron. It is said Boston importers already have partially allotted a cargo of British pig iron. Some of the Eastern Pennsylvania interests are endeavoring to keep the No. 2X grade down to the level of \$17 and \$17.50, furnace, for the remainder of the year. Prices have varied widely in the past week. A shortage of basic for the remainder of the present year still exists, and the \$18 minimum has been passed on that grade.

Rail contracts for this year have been light. The Grand Trunk is in the market for 7,500 tons for delivery early in 1910; a Missouri trolley interest is inquiring for 15,000 tons of standards; and the New York, Ontario & Western has asked for reservations for 4,500 tons for next year. The New York Central has not yet closed on its large inquiry. Rail specialists estimated that the inquiries for winter rolling now being passed around in the Eastern markets aggregate about 100,000 tons. Sales of ferromanganese have been reported as low as \$43, but the market seems firm at \$44. Contracts aggregating 5,500 tons of cast iron pipe have been closed during the week, in New York and Virginia, and the local municipal contract for 9,000

tons still hangs fire.

Business and apartment house lettings in New York during the week aggregated 14,000 tons of structural steel. The Pennsylvania Steel Company took the 1,000-ton contract for the Cape Cod rolling lift bridges, while a Southern tonnage of 4,000 tons went to two Virginia concerns, and the Boston Bridge Works took New England railroad work aggregating 1,100 tons. The American Bridge Company's new awards in this district for the week exceeded 5,000 tons.

The scrap market is very irregular. Last week's opening of the bids on the Panama junk, at Washington, had little affect on the market. Offers of \$18, for heavy melting scrap, found no takers in this market during the week, though a large tonnage was asked. There were reports that a cargo of German scrap has been engaged by New York importers to relieve the situation.

Chicago Must Make 500,000 Tons Of Rails in Four Months.

CHICAGO—The Steel Corporation officials intend to try to bring the capacity of the Chicago and Gary rail mills up to 500,000 tons between September 15 and the first of the year. The Illinois Steel Company, it is now said, has 350,000 tons of rail orders on hand, with 200,000 tons more pending from Western roads. The August output of the Gary mill is understood to have been 40,000 tons, and that at South Chicago 50,000 tons. Gary will be speeded up within the next month, and is confidently expected to make some surprising records. Meantime, it is evident that some of the tonnage for the Western roads will have to be turned out at the Pittsburgh mills.

Makers of finished products are beginning to be seriously embarrassed by the slowness in the deliveries of plates, bars and shapes, by the steel mills. Some of the structural fabricating shops have not been able to keep going to their full capacity on account of the shortage of materials. Some of the mills are filled for 10 weeks and longer. The operation of the Gary mills has not relieved the billet situation as much as had been hoped, the demand growing in ratio with the enlargement of capacity. Open hearth billets still command a premium in this market. The Iroquois Iron Company's furnace B, which was lighted a week ago, is increasing the output of pig iron, but foundry irons are stronger than a week ago. There is no more \$14 Birmingham iron to be had for this year's delivery, \$14.50 being asked, and \$15 for 1910 delivery. Over 1,700 tons of Jackson county silvery iron was taken up by a local interest during the week at a slight advance over the

ruling price a week ago. On Northern foundry iron, \$18, Chicago, no longer is possible. For next year's delivery on No. 2 foundry grade, \$19 is about the minimum, though \$18.50 still may be done in some instances.

Advanced prices are noted on some grades of scrap. Heavy melting steel scrap commands \$16.50, and railroad malleable \$16.25, while old iron rails have sold up to \$19.50.

Southern Ohio Furnaces Seek Higher Prices.

CINCINNATI — With Alabama iron firmly fixed at \$14.50 for prompt deliveries, and an advance imminent in Ohio foundry grades to \$16.50, Ironton, considerable tonnages of speculative iron have been brought into the market the past week. Sales have been very heavy in Cincinnati market. A few Southern interests are said to be still willing to sell small tonnages for the present year at \$14, but the majority of them are asking \$14.50 for all deliveries from October 1 to the end of the first quarter of next year. Sales of some 3,000 tons of No. 2 Southern for first quarter's delivery at \$14.50 are reported. Although additional furnace capacity in the Ironton district is to be on during the coming week, some of the Southern Ohio pig iron makers are out of the market until they can secure the \$16.50 price. Jackson county silveries are unchanged, but 50 cents additional, or \$20.20 Cincinnati, asked for next year's deliveries. Prompt foundry coke can still be bought here at \$2.60, Connelville, for fourth quarter, though consumers have been warned of a rapidly rising market.

There is some bidding here on the Westinghouse inquiries for next year's iron, while Indiana and Michigan automobile and agricultural machinery concerns are in this market with inquiries totalling nearly 20,000 tons of foundry iron for next year.

In their special report to the Industrial World, Rogers, Brown & Company say:

September will set the high-water mark in production, consumption and sales of pig iron for many months. The market, which has been strong, is broader and stronger than at any time heretofore, with prices advanced over a week ago in almost every district. While some furnaces which were out of the market at last report have finally consented to take on iron for next year, a large number have withdrawn and are out of the market at the present time.

The features of the week in this district have been large sales for the first half of next year and the number of good purchases for the balance of this year from concerns which it has been thought, were covered to January 1, but increased business made it imperative to buy iron for the next three months,

which has been done only at an advanced price.

The market in the Birmingham district is firmly established and all producers seem to be a unit in offering at the same figure. There is a large tonnage under negotiation at the present time and will probably be closed in a few days.

Among finished products there has been the same marked activity, with the exception of rails which have not been bought heavily. Reports from consumers in various lines tend to show that the revival is now general, books are well filled and in some instances plants are working extra time.

Coke has been even more active and energetic than pig iron and is now in a most flourishing condition. There has been a rapid advance in prices and orders have been in immense volume. The output was only slightly increased during the week on account of continued shortage of labor in all fields, with prices very strong and early advances anticipated.

Panama Scrap Bids; Iron Market Still Advancing.

PHILADELPHIA — An immense range, from \$8 to nearly \$19, was shown by last week's bids, the bids offered at the sale of scrapped machinery from the Isthmus of Panama at Washington, on which no awards have yet been made. The bids were for net tons, delivered at New York. The bids, summarized, were at these figures:

Block-Pollak Iron Company, Chicago, \$8.77 per ton; Philip Broomfield Company, Chelsea, Mass., \$10.20; W. A. Buxton Machinery Company, Worcester, Mass., \$7.26; Chicago House Wrecking Company, Chicago, \$1,500,000 on lump bid, or \$10 a ton; M. Cohen, St. Louis, Mo., \$9.41 per ton; Columbia Smelting & Refining Works, New York, \$12.29; Hirsch Rolling Mill Company, St. Louis, Mo., \$7.68½; Cal. Hirsch & Sons' Iron & Rail Company, St. Louis, (classified bid), \$8 to \$12.66 per ton, extras for brass and copper; Henry A. Hitner's Sons Company, Philadelphia, \$12.53; International Iron & Metal Company, Newark, N. J., \$10.13; Joseph Joseph & Brothers Company, Cincinnati, \$13.51½ per ton, with certain deductions; David Kaufman & Sons Company, Elizabethport, N. J., \$9.41; P. J. McArdle, Albany, N. Y., \$10.20; Ohio Iron & Metal Company, Chicago, \$8.37½; Panama Iron & Steel Company, Philadelphia, \$10.06; Maurice Rosenthal Investment Company, San Francisco, Cal., (all material advertised), \$17.20 per ton; Frank Samuel, Philadelphia, \$10.11; S. Salmonson, San Francisco, \$18.80; Samuel Spiro, Chicago, \$10.61.

The minimum on prompt No. X foundry iron in the Philadelphia market for this year is now \$18.25, delivered, though a number of furnaces are refusing to do less than \$18.50, and the beginning of the last week of the month probably will see No. 2X firm at the last-named figure. A large tonnage has been taken, though mostly in small lots, for this year's shipment, the large consumers having covered pretty well several weeks ago. Virginia foundry irons sold during

the week for \$18.25 for No. 2X. On forge iron, prices range from \$17 to \$17.50, furnace, one small lot having been taken at \$17.25. A large tonnage of basic, something over 15,000 tons, was taken up by two interests early in the week at \$18, delivered, and a shade less. There is still some basic to be had for next year's delivery at \$18, though most makers are holding off for 50 cents higher.

Structural contracts are pending for a considerable tonnage, and fabricators evidently have their hands full, for several important contracts have been allowed to go almost by default, and deliveries are badly behind. Buffalo furnaces have advanced No. 2X foundry iron to \$17, Buffalo.

Southern Iron's Latest Leap; More Rail Orders In.

BIRMINGHAM — Birmingham iron took another jump during the week, going to \$15 per ton for No. 2 foundry for prompt delivery. This is the highest price reached in this district since 1907, and is an advance of \$4 per ton since last spring. Special brand and analysis iron is bringing \$16 per ton. The price of \$15 is for immediate delivery and it is expected that \$15.50 per ton will be the basis for delivery the first of next year within the next few weeks.

The supply of iron in all the yards in the Birmingham district does not exceed 80,000 tons—about two weeks' make—and most of this belongs to speculators and to manufacturers who bought in anticipation of advances. The furnace companies are selling right up to their capacity and additional furnaces are being put in blast as fast as they can be overhauled.

The production for September will show a marked increase over the month of August and the output will be increased right along. The demand is keeping pace with this increase and the makers are confident that they have entered upon one of the greatest periods of prosperity enjoyed in recent years. Three of the largest producers in the district are out of the market for any delivery, and other large producers are practically out for the time being. The charcoal iron market has been active, and the price is firm at \$21 per ton at the furnace.

Manufacturers of cast-iron pipe report the outlook as exceedingly bright in their line, and while they are evidently giving their customers the benefit of the low-price iron they have on hand, it is only a question of time before the price must advance materially in order to take care of the advanced price of their raw material.

No. 3 furnace of the Sloss-Sheffield

Steel & Iron Company was blown in during the week; also No. 3 furnace of the Tennessee Coal & Iron Company was blown in last week, making a total of six furnaces out of seven in operation by the Sloss Company.

The sales department of the Republic Iron & Steel Company, here advise that their best price on bar iron is \$1.45 East St. Louis, plus rate of 34 cents to Birmingham, making the base price \$1.79 Birmingham.

Since last reports of steel-rail orders on the books of the Tennessee Coal, Iron & Railroad Company, additional sales have been made aggregating 89,250 tons, making total orders now on hand 269,790 tons.

Coke Makes New High Marks; Labor Shortage Still a Factor.

CONNELLSVILLE — Uncertainty was shown all week in quoting prices on spot or future coke in the Connellsville field. Sales of furnace coke for prompt delivery are reported at all the way from \$2.50 to \$2.75; while in a number of cases offers of \$2.75 for delivery through the first quarter of next year have been refused. Sales have been made of prompt coke, however, at \$2.65, which probably is about the market. The Connellsville "Courier," in its current issue quotes Connellsville foundry coke for prompt delivery at \$3, and furnace coke at \$2.50 to \$2.75. The figures on foundry coke are undoubtedly high, as \$2.85 has been done.

The "Courier's" report of ovens in blast in the upper and lower Connellsville field for the week ending September 18, shows a gain of 189 in the number of active ovens. The "Courier" also says that upward of 200 additional ovens had been put in blast since Monday, September 20, up to Wednesday evening. The figures for the week ending September 18 were: In blast, 32,917; out, 5,642—as against 32,728 in blast the previous week, and 5,831 idle. The production for the week ending the 18th was 426,648 tons, as against 424,568 tons the previous week. The shipments were 13,350 cars, a falling off of 191 cars from the week before. The shortage of cars is beginning to be almost as a great a handicap in the Connellsville district as the shortage of labor. The Baltimore & Ohio is feeling the car shortage most severely. The "Courier" says:

"The shortage of labor is most felt in the district surrounding three of the biggest plants and finest coal operations in the Southern end, the Republic Iron & Steel Company, Thompson-Connellsville Coke Company and the Tower Hill-Connellsville Coke Company. A slight hardness in the coal in this section is

given as the reason for the scarcity of good workmen."

In his report for the week ending September 18, George B. Irvin, secretary of the Coke Producers' Association, says:

Coke production increased last week 5,000 tons over the preceding week, due to the firing of 407 ovens in the two districts during the week. Our reports show 33,235 of the 38,227 ovens in the two districts now active.

Shipments to Pittsburgh and points West via the three railroads fell off 110 cars as compared with the preceding week.

Additional ovens were put in during the week by the Orient Coke Company, which plant is now running full; the McKeefrey Coal & Coke Company, at New Geneva, the Stewart Iron Company resumed after a short shut-down, the Consolidated Connellsville Coke Company, the South Fayette Coke Company, Thompson Connellsville Coke Company, Tower Hill Coke Company, Bessemer Coke Company, and a few ovens at each of several other plants.

Labor situation practically unchanged. The ovens being put in operation drew men from other plants and most of the few men coming into the region are inexperienced in mining and unable to do the work of experienced men.

REVIEWS OF CATALOGS.

"Efficiency as a Basis for Operation and Wages," by Harrington Emerson, has been revised and published in book form by the Engineering Magazine, New York. The writer has injected a distinctive philosophy in his work, and his principles are applicable, not to the wage question alone, but to many departments of manufacture. He shows that the greatest efficiency is found in the smaller manufacturing establishment which is able to defy the competition of the world, while the work accomplished by the United States Government and the larger corporations if developed to the highest degree of economy would increase the production four-fold. The realization of standards in practice is discussed at length and the advantages of specializing are presented. Cost accounting, economy in the use of power and machinery, the location and elimination of wastes and the gospel of efficiency are chapters of interest to the management of manufacturing establishments.

* * *

The Pittsburgh Feed Water Heater Company, Pittsburgh, has issued a catalogue describing the line of open and closed types of feed water heaters and purifiers. The sizes range from 50 to 5,000 horsepower, and the type presented represent the development achieved in 12 years of service. Advantages claimed for the heater are that it maintains a heat of 210 degrees, positively prevents oil and other impurities from entering the boiler, has an effective spraying de-

vice, revolvable precipitating and distributing pans, automatic regulation and the highest possible efficiency.

* * *

The S. Obermayer Company, Cincinnati, Ohio, manufacturers and dealers in foundry supplies, has issued a catalogue describing the Peerless electric portable chipping hammer, the Peerless portable drill and a line of electric grinding and polishing machines. The machines are made in various sizes, are air cooled and of the highest efficiency.

* * *

The W. S. Rockwell Company, New York, has issued a pamphlet describing the improved Rockwell annealing and hardening furnace. The furnace is built in sizes ranging from 13 to 54 inches, and is adapted to the use of oil or gas fuel. The company manufactures furnaces for all classes of work and for all fuels.

* * *

Volume XI has been issued by the American Ceramic Society, Columbus, Ohio, containing papers and discussions read at the meeting of the society held at Rochester, N. Y., in February, 1909, and a number of contributions from members and nonmembers. The volume will prove of interest to manufacturers of clay products.

To Make Flying Machines.

The Fleiss Equipment Company, of Brooklyn has been incorporated at Albany, N. Y., with a capital of \$100,000 to manufacture, operate, exhibit and sell airships, areoplanes and ballons. The directors are Charles E. Muller, Bererford W. D. Woodward, of Brooklyn, George Bender, William A. Towner, Jr., of New York city, and John J. Muller, of Lake Hopatcong, N. J.

I recently noticed a soggy, sour individual looking gloomily at the front of a plumbing establishment. I came up closer to him, trying to find out the cause of his curiosity. At last I realized that his attention was riveted on one single sign. It read: "Cast Iron Sinks."

The man turned and saw me also examining the sign. He pointed his finger toward the board.

"Why," he said, "any blank fool knows that."—Bohemian.

The Union of Belgian Portland Cement manufacturers, which has suffered much through the reduction of prices on the part of the outside works, of which the number keeps increasing, is about to be dissolved, so as to be better able to fight these outsiders. The result will no doubt be an increased competition from Belgium in various foreign markets.

Range of Weekly Quotations of Pig Iron

PIG IRON

	Sept. 25.	Sept. 18.	Sept. 11.	Sept. 4.	Aug. 21.	Aug. 21.	Aug. 14.
At Pittsburgh—							
Bessemer	18.90	18.40	17.90	17.65@17.90	17.40@17.65	16.90@17.40	16.90
Basic	16.90@17.40	16.90@17.40	16.65@16.90	16.40@16.90	16.40@16.90	16.15@16.40	16.15@16.40
No. 1 Foundry	17.40@17.90	17.40@17.90	17.15@17.65	16.90@17.40	16.90@17.40	16.90@17.15	16.90@17.15
No. 2 Foundry	17.15@17.65	17.15@17.40	16.65@16.90	16.40@16.90	16.40@17.15	16.15@16.65	16.15@16.65
Malleable Bessemer	17.15@17.40	17.15@17.40	17.15@17.40	16.65@16.90	16.65@16.90	16.40@16.65	16.40@16.65
Gray Forge	16.65@16.90	15.90@16.15	15.90@16.15	15.65@15.90	15.65@15.90	15.15@15.65	15.15@15.65
Low Phosphorus	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90
Ferro Silicon, 50 per cent	64.00@66.00	64.00@66.00	64.00@66.00	64.00@66.00	64.00@66.00	64.00@66.00	63.50@65.00
Ferro Silicon, 10 per cent	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00
Silicon Spiegel, 10 to 12 per cent ..	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00
Spiegeleisen	25.50@30.00	25.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00
Ferro Manganese	45.95@46.95	44.45@46.45	44.45@45.45	43.95@44.95	43.95@44.95	43.45@44.45	42.95@43.95
At Virginia Furnaces—							
Basic	16.50@17.00	16.00@16.50	15.50@16.50	15.50@16.50	14.50@15.50	14.25@14.75	12.75@13.00
No. 1 X	17.00	16.50@17.00	16.50@17.00	16.50@17.00	15.00@15.50	15.00@15.50	14.50@15.00
No. 2 X	16.50	16.00	15.50@16.00	15.50@16.00	15.00	14.50@15.00	14.00@14.50
No. 2 Plain	16.00@16.25	15.50@15.75	15.00	15.00	14.00@14.50	13.75@14.50	13.25@13.75
Gray Forge	15.50@15.75	15.00@15.25	14.50@15.00	14.50@15.00	14.00@14.75	13.00@13.50	12.75@13.00
At Birmingham—							
No. 1, Foundry	15.00	14.50	14.50	14.00	14.00	13.50@14.00	13.00@13.50
No. 2, Soft	14.00@14.50	14.00@14.50	14.00	13.50@14.00	13.50@14.00	13.50	13.00@13.50
No. 2, Foundry	14.50	14.00@14.50	14.00	13.50@14.00	13.50@14.00	13.50	13.00@13.50
No. 3, Foundry	13.50@14.00	13.00@13.50	13.00@13.50	12.50@13.50	12.50@13.50	12.00@13.00	12.00@12.50
No. 4, Foundry	12.00@12.50	11.50@12.00	11.50@12.00	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50
Gray Forge	13.00@14.00	13.00@14.00	13.00@14.00	12.00@13.50	12.00@13.50	11.25@11.75	11.25@11.75
At Philadelphia—							
No. 2X Foundry	18.00@18.50	18.00@18.50	17.75@18.25	17.50@18.00	17.00@17.50	17.00@17.50	17.00@17.50
Basic	18.00@18.75	18.00@18.75	18.00@18.50	18.00	17.00@17.50	17.00@17.50	17.00@17.50
Gray Forge	17.00@17.50	16.75@17.25	16.75@17.25	16.50@16.75	16.00@16.50	16.00@16.50	16.00@16.50

STEEL.

Tons of 2,240 lbs., at Pittsburgh—							
Bessemer Billets	26.00@27.00	26.00@27.00	25.00@25.50	25.00@25.50	24.00	24.00	24.00
Open Hearth Billets	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00	26.00	26.00
Forging Billets	29.00@30.00	29.00@30.00	29.00@30.00	29.00	28.00	28.00	28.00
Sheet and Tin Bars	27.00	27.00	26.00@27.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00
Bessemer Steel Rails	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Open-Hearth Steel Rails	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Light Steel Rails—							
25 to 45 lbs.	28.00	28.00	28.00	28.00	28.00	28.00	28.00
16 and 20 lbs.	29.00	29.00	29.00	29.00	29.00	29.00	29.00
12 and 14 lbs.	30.00	30.00	30.00	30.00	30.00	30.00	30.00
8 lbs.	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Bessemer Wire Rods	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Open-Hearth Wire Rods	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Muck Bar. all pig iron	27.00	27.00	27.00	27.00	27.00	27.00	27.00

FINISHED PRODUCTS.

[illegible]

and Various Finished Iron and Steel Products.

Aug. 7.	July 31.	July 24	July 17.	July 12	July 5.	June 27	June 21.	June 14.	1908 Sept. 26.
16.90	16.40@16.90	16.40@16.90	16.40	16.15@16.40	16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15
16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.15@15.40
16.90@17.15	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.15@16.40	15.90@15.16	15.65@15.90
16.40@16.65	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.40@15.65	15.25@15.40
16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	16.15@16.40	15.90@16.15	15.65@15.90	15.50@15.65	15.40@15.65
15.40@16.15	14.90	14.90	14.90	14.65@14.90	14.90@15.15	14.90@15.15	14.90@15.15	14.50@14.65	14.40@14.65
20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	15.90@20.00	19.50@20.00	19.00@19.50	21.25@21.75
67.00@68.00	67.00@68.00	62.00@63.00	62.00@63.00	63.00@64.00	63.00@64.00	61.00@62.00	62.00@64.00	61.00@62.00	67.00@69.00
23.50@24.50	23.50@24.50	24.00	24.00	24.00	24.00	24.00	24.00	24.00	25.50@26.50
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	33.50@34.00
29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	31.00@31.50
43.45@43.95	43.45@43.95	43.45@43.95	43.45@43.95	42.95@43.95	42.95@43.95	41.95@42.45	42.45@42.95	42.45@42.95	45.00@46.00
12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	13.75@14.25
14.50@15.00	14.50@15.00	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.25@14.75
14.00@14.50	14.00@14.50	14.00	14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.75@14.25
13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75
12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.50@12.75	12.25@12.75
12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	12.00@12.50	11.75@12.00	11.75@12.00	13.00@13.50
12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.50@11.75	11.50@11.75	13.00@13.50
12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.25@11.50	11.25@11.50	12.50@13.00
11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.00@11.50	11.00@11.50	10.75@11.00	10.75@11.00	12.00@12.50
11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	10.50@11.00	10.50@11.00	10.25@10.50	10.25@10.50	11.50@12.00
10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.50@10.75	10.50@10.75	10.25@10.50	10.25@10.50	10.75@11.25
16.50@17.00	16.50@17.00	16.00@16.50	16.00@16.50	16.50@16.75	16.50@16.75	16.75@17.00	16.75@17.00	16.75@17.00	16.75@17.00
15.50@15.75	15.50@15.75	15.50@15.75	15.50	15.50	15.50	15.50	15.50	15.50	15.75@16.00
15.25	15.25	15.25	15.25@15.50	15.25@15.50	15.25@15.50	15.25@15.50	15.25@15.50	15.00@15.25	15.50@15.75
24.00	24.00	23.00@24.00	23.00	23.00	23.00	23.00	23.00	23.00	25.00
26.00	26.00	25.00@26.00	24.00@25.00	24.00@25.00	23.50@24.00	23.50@24.00	23.00@24.00	23.00	25.00
28.00	28.00	28.00	26.00@28.00	25.00@27.00	25.00	25.00	25.00	25.00	27.00
25.50@26.00	25.50@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	27.50
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.00
28.00	27.00	27.00	27.00	25.50@27.00	25.50@27.00	25.50@27.00	26.00@27.75	26.00@27.75	23.00@25.00
28.00	27.00@28.00	27.00@28.00	27.00@28.00	26.50@27.00	26.50@27.00	26.50@27.00	26.75@27.75	26.75@27.75	24.00@26.00
30.00	29.00	29.00	29.00	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.00@28.00
30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00	29.00	29.00	29.00	29.00	31.00@32.00
31.00	31.00	29.00@30.00	29.00	29.00	29.00	29.00	29.00	29.00	33.00
31.00	31.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	34.00
27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	25.00	25.50
26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	29.00@30.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	30.00@32.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	34.00@36.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	50.00
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	71.00
28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	26.00	26.00	32.00
30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	34.00
28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	26.00	26.00	32.00
30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	34.00
29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00	27.00	27.00	27.00	33.00
29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00	27.00	27.00	27.00	32.00
28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	26.00	26.00	32.00
30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	34.00
28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	26.00	32.00
30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	28.00	34.00
30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	36.00
24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	24.00	24.00	24.00	24.00	28.00
26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	28.00
26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	28.00
29.00	29.00	29.00	29.00	28.00@29.00	29.00	29.00	29.00	26.00@27.00	28.00

STEEL PLATES.

Base prices, tank quality, ¼-in. thick, per 100 lbs., f. o. b., Pittsburgh:

6¼ to 100 inches wide\$1.40

Extras over base price—

3-16 inch thick10

Gauges 7 and 815

Gauge 925

Gauges 10 and 1125

Circles20

Sketches10

Boiler and Flange quality10

Marine Steel40

Widths over 100, to 110 in05

Widths over 110, to 115 in10

Widths over 115, to 120 in15

Widths over 120, to 125 in25

Widths over 125, to 130 in50

Widths over 130 in 1.00

IRON AND STEEL SCRAP.

Old steel rails, re-rolling..\$17.50

Old steel rails, remelting.. 17.75 \$17.50

Steel axles 21.50 22.00

Heavy melting scrap 17.25 18.00

Low phosphorus 21.00 21.50

Sheet scrap 15.25 15.75

No. 1 wrought scrap 17.50 18.00

Machine shop turnings ... 13.00 13.50

Cast borings 11.00 11.50

No. 1 cast 15.75 16.00

Old car wheels 17.25 17.50

Old iron rails 18.50 19.00

Axle turnings 14.00 14.50

Railway malleable 16.00 16.25

TIN AND TERNE PLATES.

Official prices, f. o. b., Pittsburgh—
Coke tins:

14x20, I. C.\$3.55

14x20, 100 lbs. 3.40

14x20, 95 lbs. 3.35

14x20, 90 lbs. 3.30

Charcoal tins:

A Grade, 14x20, I. C. 4.15

A Grade, 14x20, 100 lbs. 4.00

Ternes:

20x28, I. C. 6.80

20x28, 200 lbs. 6.50

STEEL RAILS.

Fifty pounds and Heavier—

500-ton lots and over\$28.00

Car load lots 30.00

Less than car load lots 32.00

Light Rails—

12 and 14 pounds\$30.00

16, 20 and 25 pounds 28.00

30 and 35 pounds 28.00

40 and 45 pounds 28.00

Relaying Rails

Subject to inspection, f. o. b. Pitts-
burgh:

Stand'd 50 lbs. & heavier..\$22.00 \$22.50

25 to 40 lbs. 23.00 23.50

16 to 20-pound rails 24.00 24.50

12-pound rails 25.00 25.50

STEEL SHEETS.

Official prices, per 100 lbs., f. o. b.,
Pittsburgh—

Gauge. Black. Galv.

30\$2.35 \$3.60

29 2.25 2.35

28 2.20 2.25

27 2.15 3.05

25-26 2.10 2.85

22-24 2.05 2.65

17-21 2.00 2.50

15-16 1.95 2.40

13-14 1.90 2.30

Blue Annealed.

10 and heavier\$1.70

11-12 1.75

13-14 1.80

15-16 1.90

Corrugated Roofing.

Per square, 28 gauge, f. o. b. Pitts-
burgh—

Painted\$1.55

Galvanized 2.80

WIRE AND NAILS.

Prices to jobbers in car load lots, per
100 lbs.; retailers 5 cents additional:

Wire nails\$1.80

Plain wire 1.60

Painted barb wire 1.80

Galvanized wire 2.10

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per
cent pure are held at 24c per pound in
ton lots.

For small lots of 100 pounds and over
advances of 3c per pound are charged.

Rods and wire.....base price 32 cents

Sheetsbase price 34 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

Per Ton.

Mine-run\$1.10@1.20

¾-inch lump 1.20@1.30

1¼-inch lump 1.30@1.40

3-inch lump 1.55@1.65

1¼-inch nut 1.10@1.20

¾-inch slack55@ .65

At Buffalo—

Pgh. Frep't

Mine-run\$2.35 2.05

¾-inch lump 2.45 2.15

1¼-inch lump 2.55 2.25

¾-inch slack 1.85 1.70

At Cleveland—

Pgh. No. 8

Mine-run\$2.10 \$1.80

¾-inch lump 2.20 1.90

1¼-inch lump 2.25 2.00

1¼-inch nut 2.10 1.80

¾-inch slack 1.55 1.45

At Detroit—

Mine-run\$2.50 \$2.05

¾-inch lump 2.60 2.15

1¼-inch lump 2.70 2.25

1¼-inch nut 2.50 2.05

¾-inch slack 2.00 1.65

At Chicago—

Mine-run\$3.00 \$2.55

¾-inch lump 3.10 2.65

1¼-inch lump 3.20 2.75

1¼-inch nut 3.00 2.55

¾-inch slack 2.45 2.25

MERCHANT PIPE.

Base discounts, car load lots, subject
to one point and 5 per cent extra to
large jobbers.

Steel
Black. Galv

¾ and ¼-inch72 56

¾-inch73 58

½-inch76 64

¾ to 6-inch80 70

7 to 12-inch75 60

Extra strong plain ends—

¾ to ¾-inch65 53

½ to 4-inch72 60

4½ to 8-inch68 56

Double extra strong—

½ to 8-inch61 50

WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe
car load prices to consumers; prices to
jobbers one point and 5 per cent.

¾-inch69 ..

¾ and ¾-inch70 56

½-inch73 61

¾ to 6-inch77 67

7 to 12-inch72 57

Extra Strong and Plain Ends—

¾, ¾ and ¾-inch62 50

½ to 4-inch inclusive69 57

4½ to 8-inch, inclusive65 53

Double Extra Heavy plain Ends—

½ to 8-inch, inclusive58 47

BOILER TUBES.

Steel Iron

1 to 1½ inches50 45

1¾ to 2¼ inches62 45

2½ inches64 50

3¼ to 5 inches70 57

6 to 13 inches62 45

Less than car load lots, two points less.

2½ inches and smaller, over 18 feet, 10
per cent, net extra.

2¾ inches and larger, over 22 feet, 10
per cent net extra.

MERCHANT STEEL.

Cold rolled and ground shafting. 60
per cent off, car load lots; 56 per cent
off less than car load lots; delivered in
base territory:

Planished Tire Steel\$1.40@1.50

Iron finish, up to 1½x½ in. .. 1.35@1.45

Iron finish, 1½x½ in. and over 1.20@1.30

Toe Calk Steel 1.70@1.80

Railway Spring Steel 1.75@1.85

Cutter Shoe 1.95@2.05

Flat Sleigh Shoe 1.55@1.65

Crucible Tool Steel 7.00@8.00

Open-Hearth Spring Steel .. 2.05@2.30

Freight Rates On Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig Iron, from Virginia furnaces to Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	\$2.35	\$3.60	\$3.20	\$2.35	\$3.30	\$3.35
Bristol		3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.35	3.60	3.20	3.00	3.95	4.00
Kayula, Ivanhoe, Rural Retreat ...	2.35	3.60	3.20	3.40	4.35	4.40
Pulaski, E. Radford, Max Meadows.	2.35	3.60	3.20	3.25	4.20	4.25

Pig Iron from Birmingham, Ala., tons of 2,240 lbs. to—	Cleveland ...	1.65
Boston, by water	Columbus	1.65
Chicago	Cincinnati	2.10
Cincinnati and Ohio River	Chicago	2.65
Cleveland	East St. Louis	2.80
Milwaukee and Northwest	Hamilton, Ont.	2.20
New York, all rail	Joilet	2.65
New York, rail and water	Louisville	2.65
Philadelphia, all rail	New York	2.85
Philadelphia, rail and water	Pittsburgh .....	.80
Pittsburgh	Philadelphia	2.15
St. Louis	Richmond, Va.	3.04
To Pittsburgh from—	Toledo	2.25
Dunbar Furnaces	Valley Furnaces	1.35
Kittanning Furnaces		
Scottdale Furnaces		
Valley Furnaces		
Wheeling		
Valley Furnaces to—		
Cleveland		

TIN PLATE.

	C.L.	L.C.L.
Per 100 lbs., Pittsburgh to—		
Boston, Mass.	18	21
Albany, N. Y.	16	19
Baltimore, Md.	14½	17½
Birmingham, Ala.	41	68
Cleveland, O.	10	13
Columbus, O.	12	15
Cincinnati, O.	15	18
Concord, N. H.	18	21
Charlotte, N. C.	39	61
Charleston, S. C.	33	70
Charleston, rail and water..	23½	31
Covington, Ky.	15	18
Chattanooga, Tenn.	33	65
Chicago, Ill.	18	21
Canadaigua, N. Y.	13½	16
Des Moines, Ia.	37½	48½
Detroit, Mich.	15	18
Denver, Mich.	84	118
Dover, Del.	17	20
Buffalo, N. Y.	11	13
East St. Louis	22½	26
Hartford, Conn.	18	21
Indianapolis, Ind.	17	19½
Louisville, Ky.	18	21
Montpelier, Vt.	21	24
Minneapolis, Minn.	32	42
New York	16	19
Norfolk, Va.	20	24
Natchez, Miss.	32	61
Portland, Me.	18	21
Providence, R. I.	18	21
Philadelphia, Pa.	15	18
Richmond, Va.	20	24
Rochester, N. Y.	11½	13½
Syracuse, N. Y.	13½	16
St. Louis, Mo.	22½	26
Terre Haute, Ind.	18	21
Topeka, Kas.	54½	68
Trenton, N. J.	16	19

FINISHED PRODUCTS.

Finished Steel Products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire, nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—	
Albany .....	.16
Buffalo .....	.11
Boston .....	.18
Baltimore .....	.14½
Canandaigua .....	.13½
Cleveland .....	.10
Columbus .....	.12
Cincinnati .....	.15
Chicago .....	.18
Harrisburg .....	.14½
Louisville .....	.18
New York .....	.16
Norfolk .....	.20
Philadelphia .....	.15
Rochester .....	.11½
Richmond .....	.20
Scranton .....	.15
St. Louis .....	.23
Washington .....	.14½
To Pittsburgh from—	
Mahoning and Shenango Valleys..	.05
Wheeling .....	.05

COAL.

Coal Rates from Mines—	
To Ashtabula	\$1.00
To Allegheny, Pan'dle Ft. W. trk..	.43
To Allegheny, West Penn tracks..	.48
To Allegheny, B. & O. ....	.35
To Pittsburgh, P. R. R. Main Line..	.43
To Pittsburgh, B. & A. V. Div..	.48
To Pittsburgh, B. & O. ....	.33
To Valleys .....	.70
To Buffalo	1.25
To Cleveland	1.00
To Detroit	1.40
To Chicago	1.90
To New York, gross ton	2.25
To Philadelphia, gross ton	2.00

From Freeport—	
To Buffalo	1.10
For Lake Shipments— Cargo. Fuel.	
To Ashtabula .....	.88 .98
To Cleveland .....	.88 .98
To Erie .....	.88 .98

West Virginia rates from mines—	
To Chicago	1.90
To seaboard points, gross ton	1.80

From No. 8, of Ohio—	
To Cleveland .....	.90
To Chicago	1.65
To Detroit	1.15

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	BILLETS.
Baltimore	\$2.15	\$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville .....	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va. ....	.90	1.00
Youngstown .....	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango Valleys ..	1.00	
Wheeling	1.00	

COKE.

From Connellsville region, per 2,000 pounds to—	
Boston	\$3.50
Buffalo	1.00
Baltimore	2.75

Wabash-Pittsburgh in New Hands; Costly Extensions; Relief to Shippers

HARRIMAN GROUP, INCLUDING ERIE AND LAKE SHORE, TO REACH PITTSBURGH OVER FAMOUS TERMINAL—INTERRUPTED IMPROVEMENTS IN OHIO TO BE RESUMED.

Reports that reached Pittsburgh during the week just ended leave little doubt that the plans of the late E. H. Harriman for the development of the Wabash-Pittsburgh Terminal, the Wheeling & Lake Erie, and allied roads are to be worked out along the lines he indicated some time before his death.

Such a solution to the problem left by Ramsay's half-completed eastern extension of the Wabash system, has long been devoutly wished by Pittsburgh shippers, who saw in the Wabash a chance for relief from the present "community of interest" in the roads entering Pittsburgh. Sometime before Mr. Harriman's death, it was announced, on excellent authority, that the plans had been outlined to that magnate and accepted by him for an entrance into Pittsburgh by the Erie system over the Wabash-Pittsburgh Terminal tracks.

This is the plan, very slightly altered, which is now to be adopted. It will mean the early lifting of the receivership; the resumption of work on the extensive improvements to the Wheeling & Lake Erie, begun some time ago, and an active campaign for the new competitor's share in the immense tonnage of the Pittsburgh district.

Soon after Mr. Harriman's death, reports were published that the Wabash was destined to be gobbled up by the Lake Shore. Shortly after, the Lackawanna was credited with similar intentions. Both these reports were promptly denied.

These denials, it is believed, may be accepted as accurate, as the actual plan is for the acquisition of the Wabash itself, that transaction carrying with it the control of the Wheeling & Lake Erie and the Pittsburgh Terminal, in the joint interest of a number of railroad companies, among them, it is believed, the Lackawanna, the Lake Shore, the Erie and the Rock Island.

The Wabash-Pittsburgh Terminal Railway, the costly 60-mile line through which the Wheeling & Lake Erie and the Wabash obtained their entrance into Pittsburgh and the opportunity to enjoy the benefits of the contract through which one-fourth of the annual tonnage of the Carnegie Steel Company was to be carried by the Gould system, went into the hands of receivers on May

29, 1908, and on June a receiver was named for the Wheeling & Lake Erie.

When, on August 1, 1908, Harriman relieved Gould of the embarrassment of defaulting on \$8,000,000 of three-year five per cent notes, it was said that the agreement between Mr. Harriman and Mr. Gould involved certain concessions on his part which would not be made public for the present. It is said now that the plan for joint interest by other roads in the Wabash control, was probably part of that agreement.

WORK OF SHAWMUT ROAD.

Contracts Let for 36 Out of 100 Miles of Roadbed.

Contracts were let in Pittsburgh during the week just ended for the construction of 36 miles of the newly surveyed route of the Pittsburgh, Shawmut & Northern Railroad, formerly known as the Brookville & Mahoning Valley Railroad. An army of laborers will be employed on the new work within 10 days' time.

The contract for the first 36 miles of construction was awarded to the J. H. Corbett Construction Company. J. M. Floesch, formerly chief engineer of the Buffalo, Rochester & Pittsburgh Railroad Company, who resigned a year or so ago, is one of the officers of the construction company and will have charge of the work. The contract represents an expenditure of about \$2,200,000.

The report was published in Pittsburgh during the week that the new road was designed for a connection with the Lackawanna. This was denied by Frank Sullivan Smith, receiver and acting president of the Pittsburgh, Shawmut & Northern Railroad Company.

This company, which is controlled by the dominant interests in the Pittsburgh, Shawmut & Northern Railroad Company, is to have a line a little in excess of 100 miles, of which 62 miles are still under construction. Thirty-six miles of this distance will be built by contractors, the company itself undertaking the construction of the other 26 miles. The new line is expected to be completed in about 18 months.

There will be six tunnels, a heavy steel bridge across the Allegheny river, four or five smaller steel bridges and several big cuts and fills along the new line. The contract was awarded with the understanding that work is to be started immediately, so most of the grading can be completed before cold weather sets in. Tunnel work and operations on deep

cuts and fills can be carried on all during the winter and the new railroad will be completed some time next year.

Surveys for the new road, which were completed some time ago, show that the line will extend south from Brookville, Pa., to Mahoning, Pa., along the Allegheny River a short distance above Freeport. The line will pass through a portion of Jefferson and Armstrong counties.

Tie Famine is Feared.

That the railroads are confronted with a shortage in the supply of timber for ties, and that they will take measures to support the forest conservation movement, is indicated by the warning sounded by the Roadmasters and Maintenance of Way Association of America, which held its convention in Washington last week. The discussion of the best ballast for heavy traffic occupied the attention of the delegates for a day.

"Confronted as we are with a rapidly depleting supply of suitable timber, it is obligatory that the railroads aid in conserving, as far as possible, the present limited area in which tie timber exists," is the manner in which the Committee on the Comparative Value of Ballast Materials drew attention to the threatened tie famine.

Journal Box Specified.

The Kensington all-steel journal box, made by the Union Spring & Manufacturing Company, Pittsburgh, has been specified for use on the following equipment: 2,600 coke cars, Pennsylvania Lines West; 2,450 freight cars, Pennsylvania Railroad; 2,500 coal cars, Chesapeake & Ohio; 300 coal cars (to be built at the Roanoke shops), Norfolk & Western; 120 cars, Vandalia; 140 cars, Grand Rapids & Indiana, and 250 flat cars, Western Pacific.

New Cars on Northwestern.

Orders have been placed by the Chicago & Northwestern for 125 steel, fire-proof coaches, reclining chair-cars, parlor-cars, dining-cars and baggage-cars, and this equipment is now under construction for early delivery.

All of these cars are fully equipped with non-collapsible, heavy reinforced steel frames, with the most modern vestibules, Westinghouse high-speed air-brake equipment, and the latest improved draft-gear. The floors are laid with a sanitary composition that adds strength to the car and deadens the noise of the train. Even the frames of the seats are built of steel, and no combustible material enters into any part of the construction.

The new dining cars will have features that are of direct interest to the public. Each car is arranged to seat 36

people, which is six more than the usual standard, and special improvements have been effected in the arrangement of the kitchen and pantry, which will insure greater capacity and more prompt service and at the same time remove all odors from the kitchen.

The Chicago & Northwestern Railway will be the first western road to provide all-steel, safety, fireproof equipment on all of its through passenger trains.

TEST ALL-STEEL BOX CARS.

Union Pacific Gets Satisfactory Service From New Type.

In reply to an inquiry by the Columbus, (O.) Car Review, regarding recent tests that have been carried on with all-steel box cars, J. Kruttschnitt, director of maintenance of the Union Pacific System and the Southern Pacific Company, has written:

The Union Pacific have constructed and turned out two 40-foot, 50-ton all-steel box cars as follows:

No. 72840, September 30, 1906, up to July 1, 1909, has made approximately 34,316 miles.

No. 72851, January 18, 1907, up to the same time made approximately 35,332 miles.

These cars have been given the most severe service in rigid as well as mild climates, and other than having been painted in April, 1909, very few repairs have been necessary, therefore no figures are available on which to base a calculation for cost of repairs as compared with wooden cars.

Cars weigh approximately 38,000 pounds, or 3,650 pounds per car less than common standard steel underframe with wood superstructure car of about the same dimensions. The steel car is, of course, not susceptible to damage or complete destruction by fire.

Shortly after their construction, a deflection test was conducted with all-steel and combination steel underframe with wood superstructure car, each loaded in center sill with 152,000 pounds of lead. The former car showed a deflection of 3-16 inches, while the latter car showed a deflection of 13-16 inches.

In the design of the all-steel car the body is practically one piece; all members are securely riveted together, posts, braces, center and side sills, carlines, etc., being securely held together by means of side, roof and floor sheets, which are, as a matter of fact, gussetts.

Our experience so far with the all-steel car has been altogether satisfactory, and as a result we are building 25 additional cars of about the same general construction.

Harriman in Electric Roads.

It is not generally known that the late E. H. Harriman was heavily interested in electric railways as well as in steam road properties. His interest in the street railways of the western cities was part of his general plan of developing the country. He acquired and reconstructed the system of the Utah Light & Railway Company, of Salt Lake City;

he was in control of the Pacific Electric and the Los Angeles-Pacific interurban systems at Los Angeles, and was heavily interested in the Los Angeles Railway Company. Through the Southern Pacific he was supposed to control the United Railways of San Francisco, and he is said to have recently acquired control of the property at Fresno, Cal. He was a director of the Brooklyn Rapid Transit Company.

Rock Island's Steam Motor.

The Ganz steam motor car tested by the Chicago, Rock Island & Pacific with unsatisfactory results about a year ago has been returned to the road fitted with a new Ganz engine of lower steam pressure and a new Baldwin boiler and super-heater. A party of officers of the Rock Island and other western roads made a trial trip on the car out of Chicago on September 14, and it will shortly be put in service on one of the branch lines. The car was built by the Railway Auto Car Company, weighs 53 tons and seats 48 passengers. The engine is 250 horsepower capacity. In order to secure comparative information of the performances of the various kinds of motor cars being tested, several cars will each be tried for a time on various runs.

Improvements in Eastern Ohio.

The Cleveland, Painesville & Eastern Railway Company, of Willoughby, O., is preparing to make improvements to its track and roadway and will practically rebuild two of its largest bridges, one crossing the Grand River, near Painesville, and the other crossing the Chagrin River at Willoughby. The first mentioned bridge will be strengthened by the replacing of a timber span with a 150-foot steel span, while a practically new steel structure, 850 feet long will replace the present timber bridge over the Chagrin River. The American Bridge Company has the contract for the work.

Northwestern Cut-Off.

Reports from Chicago say the Chicago & Northwestern has begun construction on 277 miles of track which will give the company a second short and low-grade line between Milwaukee and the twin cities. The new cut-off will start at Lindworm, six miles north of Milwaukee, and join the Chicago-St. Paul line at Camp Douglass, just north of Elroy, and the Southern Minnesota and Dakota lines at Sparto. This will shorten the Milwaukee-Twin Cities route 20 miles, eliminating several tunnels and grades.

A Gas-Driven Trolley Car.

A gas-driven street car is now under construction in Philadelphia, which is to be tested on the line of the Metro-

politan Street Railway Company, of New York, to determine its ability to compete with electric cars of the company. It will be driven by two 4-cylinder motors, each of 24 horsepower. These will be water-cooled, and piping will be led from the motor jackets around the interior of the car to heat the latter during the winter service.

NEW TERMINALS.

Chicago, St. Louis and Detroit Projects Getting Under Way.

The Detroit common council last week adopted an ordinance embodying the terms of agreement between the city and the Michigan Central Railroad in regard to the erection by the latter of a new depot and terminals, to cost \$2,000,000. The railroad is given 60 days in which to accept. As the company's officials have already approved most of the agreement, the erection of the depot is assured.

It was announced in St. Louis during the week that the Missouri, Kansas & Texas Railway will expend \$4,000,000 for freight terminals in this city, according to the report of President A. H. Joline to the board of directors of that company. Two hundred acres of land and a site for freight warehouses have been acquired in the heart of the business district. Work on the new terminals will begin at once.

A dispatch from Chicago quotes F. A. Delano, of the Wabash, as saying the railroads of Chicago could obtain better and more economical results by spending \$50,000,000 for a union passenger terminal than they could by spending \$120,000,000 on six separate terminals. Mr. Delano gave his ideas regarding a new union passenger terminal to the members of the Electric Club and apparently aroused active interest in the problem which is confronting the railroads centering there.

The members of the club were told that there was no reason why all of the roads entering the city from the south should not construct a series of unit stations for the use of all and recommended Twelfth street as the location.

Asked if his scheme of a union terminal at Twelfth street would interfere with electrification of terminals, Mr. Delano replied: "The plan which I have outlined could be carried on more rapidly with electrification than without it."

New Depot for Ft. Wayne.

Formal announcement has been made by the Pennsylvania of its plans to erect a new passenger station in Ft. Wayne at a cost of \$225,000. It will be modeled after the Allegheny station at Pittsburgh, and the work will be carried forward in connection with track elevation.

The company has recently purchased two blocks adjoining its tracks as a site.

Two Millions for Improvements.

The Pittsburgh, McKeesport & Westmoreland Railway Company expects to spend \$2,000,000 on extensions and improvements next spring. A meeting of the stockholders has been called for a vote on the question of increasing the concern's indebtedness to the seven-figure mark.

The meeting will be held at the general offices of the company, McKeesport, November 22. Manning Stires, manager of the company, has departed on a European trip. He will return early in November.

Before departing Mr. Stires said provision for the money has been made and that it will be available as soon as the stockholders approve the loan. The company recently was granted rights in West Newton and when the line is built next spring from that place to Herminie, it will have connection with McKeesport.

The company also has rights along the Monongahela River above McKeesport, and by next spring Mr. Stires expects to see all rights for a line to Elizabeth and across country to West Newton completed.

A New Coal Car.

H. D. Taylor, superintendent of the Reading Motive Power works, has been testing a new coal car which he has designed. It is eight inches wider than the cars now in use by the works, weighs seven tons, and is designed to hold 10,000 pounds.

For New Power Plant.

A report from Monmouth, Ill., says the Westinghouse Company has secured the contract to furnish for the power house of the Rock Island Southern on Edwards River, the equipment, consisting of two 100-turbine units of 25,000 horsepower, complete, with 15,000 KW. generators.

Big Four Improvements.

Directors of the Cleveland, Cincinnati, Chicago & St. Louis Railroad Company, at a meeting, adopted a resolution providing for an issue of \$20,000,000 bonds. Proceeds of the issue, of which it is understood only \$10,000,000 is to be brought out at first, are to be used to pay for improvements already planned.

To Widen Pittsburgh Bridge.

Representatives of the Pittsburgh Railways Company, Baltimore & Ohio and Pittsburgh & Lake Erie railroads have agreed that the improving of Smithfield street bridge, Pittsburgh, according

to plans prepared by city shall be made as soon as possible. The bridge will be widened four feet. The Baltimore & Ohio Railroad will donate part of its ground for the approach on the north end, and the Pittsburgh & Lake Erie will construct a subterranean passage to relieve the congestion of foot traffic at the south end.

Swedish Creosoting Experiments.

Regarding the experiments made by the Swedish State Railways with "wood creosote" for the preservation of their ties, Consul-General Edward D. Winslow, of Stockholm, writes the Bureau of Manufacturers at Washington:

Experiments with wood creosote instead of coal-tar creosote were begun by the railways in 1903. A number of ties were then impregnated with wood creosote, or rather with what it is here called, wood tar oil. It was, however, difficult to get the tar oil to penetrate deep enough into the wood, and although a pressure of 12 atmospheres was employed, not more than about 12 pounds to the tie could be absorbed. The dimensions of the ties are $6\frac{1}{4}$ by $8\frac{3}{4}$ inches by 9 feet. This quantity of the solution is considered insufficient at least on the basis of comparison with the 20 pounds of ordinary coal-tar creosote which ties absorb, to obtain which a pressure of only about 3 atmospheres is necessary.

The reason for this unfavorable result with the wood tar oil is ascribed to the consistency of the solution, but it is considered that this fact of slight impregnation does not exclude the possibility of a tie treated with wood tar oil having the same resisting power as one prepared in the old way with coal-tar creosote. The time a well-impregnated tie is expected to last is 18 years; and as only five years have passed since the ties impregnated with wood tar oil were used, the time is not yet ripe for a final judgment. So far they seem perfectly sound.

Experiments have also been made to form a solution of wood tar oil with 25 to 50 per cent coal-tar creosote, but no satisfactory results were obtained. For the present further experiments with wood tar oil have been abandoned, chiefly for the reason that the railroads do not possess facilities for impregnating on a large scale with a high pressure. The price of the wood tar oil used for these experiments is about two cents a pound.

Trolley Terminals for Uniontown.

The West Penn Railways Company, it is said, will build a big terminal station in the west end of Uniontown before April 1, 1910. According to published reports, West Penn business will be centralized at Uniontown. Options on valuable real estate have been secured. It is also rumored the West Penn contemplates the building of new lines to develop virgin territory in Westmoreland and Fayette county territory.

Try a Want or For Sale ad in the Industrial World.

STEEL OR CONCRETE TIE?

Different Projects for Replacing the Wooden Tie.

Announcement was made recently by officers of the Pittsburgh Railways Company that the steel tie will be definitely adopted as the standard for all new construction work by the company if tests now being made result satisfactorily.

Four years ago the Railways company laid a section of its tracks in Ninth streets, Pittsburgh, on steel ties. Recent regrading, or raising, of the street has just given an excellent opportunity for observation of the way the ties have been holding out. The showing they have made is more than satisfactory. They are practically as good as new, so much so that a further experiment in Penn avenue, one of the heaviest traffic routes in the city, has been decided upon.

J. D. Callery, president of the company, said:

"Our engineers have made a very careful study of the condition of the ties, and it was found so satisfactory that they have recommended further experiments. It has been decided to put in steel ties in Penn avenue for a distance of about a mile and a half, and if they make as satisfactory a showing there as they have in Ninth street, they will be adopted as the standard of the company for use in the city. It is not likely, however, that any experiments will be made in the country for some time."

This policy would mean extensive buying of steel ties by the company. The replacement of wooden ties naturally would require a number of years, for there would be no such thing as the pulling out of ties that were in good condition; they would be replaced only after they had been worn out.

This is the program being carried out on the Bessemer & Lake Erie road. Wherever wooden ties have been worn out they have been replaced with steel ties, with the result that steel ties are now in use on five-eighths of the 138 miles of trackage of that road. An official of the company is quoted as saying that it would be a matter of only a few years until the Bessemer will not have a single wooden tie in it.

An official of the Carnegie Steel Company said that traction companies of several of the big cities of this country were now using steel ties, and had found them very satisfactory. The Chicago Railways Company only recently placed a large order for steel ties.

The price of the steel ties is approximately \$1.50 apiece, while wooden ties cost from 80 to 90 cents, but after treatment with creosote and the addition of tie-plates, the final cost of the

wooden ties, it was explained, is nearer \$1.25. It is argued, also, that the worn-out steel tie can be sold as scrap and part of its original cost recovered. In the olden days wooden ties were known to have lasted 20 years, but the conditions are very much changed now.

Utility of the Concrete Tie.

Interesting reports have just been published of tests recently made in Texas of concrete ties on a railroad roadbed. At the last meeting of the American Railway Engineering & Maintenance of Way Association, held in Chicago, a committee having the matter in charge reported that it was their conviction that a properly reinforced tie would be found an economical substitute for wood or steel where speed is slow and conditions adverse to the life of wood or metal. This finding provoked a report from the Maintenance of Way Department of the Galveston, Harrisburg & San Antonio Railroad, relating to tests of what is known as the Percival concrete tie. The ties tested were made of Giant Portland cement, sharp, clean sand and crushed sand rock, and were subjected to heavy freight and fast passenger traffic. One hundred ties were installed

October 22, 1906, for experimental purposes on a test track near Edgewater, Tex., on the main line of the Galveston branch. The report is as follows:

The dimensions of the ties are 9½ inches face, 9 inches deep and 8 feet long. The ends on the base are made oval for 3 feet, with an average bearing under the rail of 5 inches. The center of the tie is cut away for about 2 feet, making a perfect "V" shape, for the purpose of preventing center bound track, with resultant tendency of undue stress upon the tie.

The matrix contains 3 cubic feet and 55½ cubic inches each, as shown by water displacement. The average weight per tie is 445 pounds. Each tie is reinforced with four corrugated steel bars (having 3½-inch bars near the upper face of the tie, and one ¾-inch bar in the base). The bars form a triangle, and are laced together with strong wire, thus making a triangular truss, the reinforcement metal weighing about 25 pounds. Babbit metal sockets are properly staggered for cross-binding of staggered spike, the babbit metal being lined with No. 10 wire to resist friction on threads of screw spikes. Screw spikes, ⅞-inch diameter by 10 inches long, are used, extending through a hard wood cushion, 2 inches thick by 9 inches wide by 15 inches long.

The composition of the concrete, according to the report, is 6 parts clean sharp sand; 2½ parts crushed sand rock,

the largest piece would pass through a one-inch mesh sieve; 6 parts Portland cement. The inventor claims this is an error, and should read one part clean sharp sand, four parts crushed sand rock, one part Portland cement.

The concrete was hand tamped in the molds. The cost of the tie complete is given as \$1.85; installed, \$2.2103. Fifty of the ties were installed out of face, and the other 50 ties were installed with cypress ties interspersed. On June 5, of this year, A. V. Kellogg, engineer Maintenance of Way, accompanied by C. A. Thanheiser, assistant superintendent of the Texas and New Orleans and Galveston division, and the inventor, H. E. Percival, made an inspection of the piece of track, and found all of the 50 ties out of face, in perfect condition—as sound as when laid. Of the 50 ties interspersed with cypress ties, a number of the cypress ties have decayed—thereby thrusting an additional burden upon the concrete ties, with the result that seven of them are cracked and damaged, though all are still in serviceable condition, and, with proper renewal of the intermediate cypress ties, will last for some years, the reinforcement holding the ties intact and preventing any tendency of spreading of the rail.

The Florida East Coast Railway, which also made a test installation of the same type of tie some years ago, has forwarded a report, showing that they too are giving good service.

Corporations to Which Charters Have Been Granted Recently

PENNSYLVANIA.

Jeanette Machine Company. Capital stock \$12,000. Treasurer: John Bennett, Jeannette, Pa. Directors: V. C. A. Kuntz, Hempfield Township, Westmoreland county, Pa.; Frank S. Rode, John Bennett, Jeannette, Pa.

Josias Manufacturing Company. Capital stock \$10,000. Treasurer: Nathan Josias, 3315 Euclid avenue, Philadelphia. Directors: Morris Herzstein, Nathan Josias, Jacob Josias, John Josias, all of Philadelphia, Pa.

Keystone Sand & Gravel Company. Capital stock \$60,000. Treasurer: Harry S. Childs, Erie, Pa. Directors: Frank P. Coyle, Harry S. Childs, J. B. Welsh, all of Erie, Pa.

Pennsylvania Pipe Coupling Company. Capital stock \$5,000. Treasurer: John T. Swainwick, Monessen, Pa. Directors: Edward V. Anderson, John T. Swainwick, William S. Bumbaugh, John C. Lries, all of Monessen, Pa.

Stauff Coke Machinery Company. Capital stock \$10,000. Treasurer: D. B. Stauff, Scottsdale, Pa. Directors: D. B. Stauff, Sue M. Stauff, Scottsdale, Pa.; J. C. Bryson, Menallen Township, Fayette county, Pa.

Allentown Motor Company. Capital stock \$5,000. Treasurer: John C. Schwartz, Allentown, Pa. Directors: John C. Schwartz, J. E. Gomery, William T. Leh, all of Allentown, Pa.

Scranton Electric Company. Increased capital stock from \$3,000,000 to \$7,000,000.

INDIANA.

The O. U. Handy Tool Company, Indianapolis; \$10,000; to manufacture workmen's tools. L. A. Browne, W. W. Spencer and E. W. Spencer.

Coal Hill Coal Company, Terre Haute; \$50,000; producers. Marshall G. Lee, James B. Mullikin and Linus A. Evans.

Consolidated Equipment Company, Indianapolis; notice of increase of capital stock from \$5,000 to \$100,000. E. V. Abbott, president.

Sanitary Construction & Manufacturing Company, Terre Haute; notice of increase of capital stock from \$25,000 to \$125,000; E. L. Kellie, president.

Clark Motor Car Company, Shelbyville; \$150,000; manufacturers. G. B. Slaymaker, Arthur Woodward, J. D. Clark, J. W. Lovett, A. J. Thurston, J. H. Akers and Harry Teal.

Indiana Radiator Company, Walkerton; manufacturers; \$30,000. D. W. Place, Timothy Holland, C. B. Bently, B. L. Williams and O. C. Shockney.

KENTUCKY.

Davis-Urwick Company, changing name to Urwick Machinery & Supply Company, Louisville.

Eddyville Whip Company, Eddyville; \$1,500. Frederick Albee, M. P. Molloy and C. J. Brown.

Kentucky River & Shaft Company, Louisville; \$24,000. Henry F. Donagan, William C. Garland, M. R. Garland.

NEW YORK.

Washington Engine Works, New York; engineering, manufacturing engines, boilers, etc.; \$50,000. William A. White, Ada A. White, both of West Hoboken, N. J.; Benjamin H. Oliver, No. 535 Seventh street, New York.

Napanoch Knife Company, Warwassington; manufacturing knives, cutlery and edge implements; \$75,000. William L. Hoornbeck and Irving E. Carman, Ellenville, N. Y.; William Carman, Napanoch, N. Y.

Westlake Coal Company, New York; deal in coal, coke, wood, oils, etc.; \$10,000. Robert L. Westlake, Scranton, Pa.; Caroline B. Westlake, Westfield, N. J.; George W. Harper, Jr., No. 115 Broadway, New York.

OHIO.

Halmad Mining Company, Cincinnati; operating coal and other mines; C. C. Denninger, M. L. Detzel, J. B. Clyburn, Fred A. Heitzman, C. De L. Martin; \$100,000.

Conn Electric Company, Cleveland; W. F. Brooks, O. E. Conn, B. S. Kennedy, C. T. McCrones, L. S. Conelly; \$10,000.

Seamless Pressed Steel & Manufacturing Company, Quincy; G. S. Gunderson, Otto Kolb, L. M. Gunderson, R. T. Haines, Lawrence Stoltz; \$120,000.

United States Motor Truck Company, Cincinnati; Lewis W. Dodd, Harry L. Manss, A. B. Mackey, Alfred Hill, Jess Lowman and Herman Erdman; \$100,000.

Tioga Company, Cleveland; mining

coal and ores; J. W. Stuphen, F. I. Hogan, C. C. Owens, C. T. Brooks and W. D. Whiting; \$25,000.

The Curburation Company, Cleveland; Clara F. Schrod, Max E. Meisel, E. M. Golding, Walter S. Lister, E. M. Fasig; \$10,000.

Ohio Electric Car Company, Toledo, by James B. Bell, H. P. Dodge, Rathburn Fuller, Henry C. Marviah and Robert R. Lee; \$75,000.

Southern Coal & Mining Company, Cleveland, by Max E. Meisel, W. C. Rhoades, William H. Gillie, C. F. Schrod and C. N. Fiscus; \$250,000.

National Steel Products Company, Cleveland; increase of capital from \$25,000 to \$50,000.

Shelby Spring Hinge Company, of Shelby; increase of capital from \$100,000 to \$200,000.

Compressed Wood Preserving Company, Cincinnati; George C. Schneider, Henry Vogel, N. W. Weisbrodt, Martin Rosenberger, Charles E. Roth, Albert Bettinger; \$250,000.

Franklin Mining Company, Columbus; W. D. Miner, W. F. Davison, P. B. Whitsit, L. M. Weller, W. J. Phillips; \$10,000.

Alliance Brick Company, Alliance; F. A. Hoiles, W. W. Purcell, George Reeves, A. G. Reeves, Ross Rue; \$300,000.

Republic Window Glass Company, Maumee; Myron L. Case, J. E. Merry, Harry P. Bamford, E. W. Merry, Rathbun Fuller; \$250,000.

NEW JERSEY.

Williams Manufacturing Company, Camden, N. J.; manufacture cement, glue, paste, polish, leather dressings; \$50,000. Enos B. Dellmuth, Richard B. Gingland and Daniel Williams, all as above.

Motor Service Company, New Jersey; manufacture vehicles of all kinds; \$100,000. Harvey L. Lechner, Doering Beltinger and W. G. Jones.

Tractor Engineering Company, Trenton, N. J.; mechanical engineers; manufacture trucks, motor trucks, tractors, etc.; \$60,000. Walter Balderson, No. 139 Pearl street; J. W. Watts, Norway avenue; John E. Mosher, No. 250 East Hanover street, all of Trenton, N. J.

Resilient Spring Hub Company, Newark, N. J.; manufacture hubs, wheels, etc.; \$125,000. Moses Ritter, No. 69 Campbell street, Rahway, N. J.; Edgar R. Holmes, No. 370 High street, Newark, N. J.

Fraser Lock Bar Pipe Company, Jersey City; manufacture iron, steel, manganese, copper, coke, etc.; \$500,000. John Fraser, Hackensack, N. J.; Roscoe T. McCormick, Wilkinsburg, Pa.; George P. Bard, Boonton, N. J.; Colin J. McDowell and Arthur W. Krouse, both of Petroleum, O.

Cataract Motor Company, Paterson, N. J.; manufacture motor vehicles, engines, etc.; \$350,000. Louis A. Plaget, William H. Sherman, Forester W. Freeman, Harris J. Westerhoff, and George E. Hannah, all of Paterson, N. J.

Maxwell-Briscoe Toledo Company, Jersey City; manufacturing automobiles, etc.; \$2,000. S. A. Andrews, L. H. Gunther and H. O. Coughlan, all of Jersey City.

WEST VIRGINIA.

Dakota Portland Cement Company, of

Sioux Falls, S. D.; \$2,500,000. D. B. Zimmer, Sioux Falls; C. J. Bach, Hurley, S. D.; B. H. Thomas, G. S. Gilbertson, Des Moines, Ia.; A. G. Schmidt, Madison, Ia.

Hygrade Coal Company, of Fairmont; \$25,000. E. A. Russell, H. L. Heintzelman, J. W. Russell, H. H. Stagers, Fairmont; Isham Keith, Clarksburg.

West Virginia Clay Products Company, of Charleston, W. Va.; \$200,000. W. E. Caldwell, J. W. Jennings, R. H. Yates and A. H. Robinson, of Louisville, Ky., and J. H. Heighbaugh, of Sonora, Ky.

Sterling Coal Company, of Philippi, W. Va.; \$2,500,000. F. M. Kirk, R. J. Lynch, E. M. Keefer, F. L. Hogan and C. C. Owens, all of Cleveland, O.

Cunningham Window Glass Company, of Buckhannon; to manufacture window glass; \$50,000. Thomas S. Cunningham, of Pittsburgh; S. A. Moore, C. F. Teter, F. J. Owen and E. H. Crim, all of Philippi.

MANUFACTURING.

Hartford, Conn.—The Universal Machine Screw Company has decided that a new factory is essential, and has purchased a five-acre lot in Windsor street. The plans are not yet completed, but they will cover 40,000 square feet of ground.

Rochester, N. Y.—The Selden Motor Vehicle Company, Rochester, will probably ask bids in a few days on machinery for its new plant. Bids are being received for the construction of the plant, consisting of a main building, two stories, 60x300 feet, with a wing, one story, 100x136 feet, brick, steel and concrete, having a total floor space of 55,000 square feet.

Orvis, Pa.—The Hayes Run Fire Brick Company will erect a two-story brick and steel plant, 70x300 feet, to replace structure destroyed by fire. Cost, \$100,000. Plans are being prepared. Carroll Kellar is general manager.

Nashville, Tenn.—The Nashville Spoke & Handle Manufacturing Company will erect a five-story concrete warehouse.

Barberton, O.—The Razor Furnace Company will erect a new plant here.

Indianapolis, Ind.—The H. J. Martin Forging Company, organized with a capital stock of \$75,000, will erect a plant on Harding street. H. J. Martin, president; Carl H. Graf, vice president, and Augustus Jennings, secretary and treasurer.

Columbus, O.—Plans are being prepared for a two-story brick addition to the plant of the Atlas Brass Foundry Company.

Manitowoc, Wis.—The Manitowoc Foundry Machine Company has purchased a site upon which to erect a plant.

Oswego, N. Y.—The Kingsford Foundry & Machine Works Company has plans for a one-story foundry, 75x125 feet, of brick and steel. The owners will receive bids.

Torrington, Conn.—The Standard Company, Torrington, Conn., manufacturer of spokes, nipples, needles, spark plugs, etc., will soon erect an addition to its works.

Dayton, O.—The Mead Paper Company, with offices in this city and a plant

at Chillicothe, O., has decided to erect another mill and has increased its capital stock from \$300,000 to \$800,000. It will be located near the present plant and will cost approximately \$300,000.

Erie, Pa.—Constable Brothers, 205 East Fifth street, received the contract for erecting a two-story brick factory addition on 1415 Cherry street, for the Griffin Manufacturing Company. Cost \$15,000.

Punxsutawney, Pa.—Architects Ruhe & Lange, of Allegheney, Pa., awarded to James K. Long & Son, the contract for constructing a two-story brick silk mill, for the United Textile Company, to cost \$50,000.

Titusville, Pa.—The McClintic-Marshall Construction Company, Park building, Pittsburgh, received the contract for erecting a one-story brick and steel machine shop addition, for the Titusville Forge Company.

Columbus, O.—Architects D. Riebel & Son, 33 North High street, will receive estimates until September 25, on erecting a two-story brick brass foundry addition on 991 South Front street, for the Atlas Brass Foundry Company.

London, O.—Architects Maetzel, Treselt & Bassett, Columbus, are taking bids on erecting a two-story cold storage plant for the London Produce & Cold Storage Company, to cost \$15,000.

Newark, O.—Contractors Darnold & Maddox, Newark Trust building, have started foundations for a two-story brick shoe factory, to be erected on East Church street, for the G. Edwin Smith Shoe Company. Cost \$15,000.

Lima, O.—The Ohio Steel Castings Company will erect a 200-foot addition to its plant.

Collinwood, O.—John A. Kling and Charles Miller, are reported interested in a company which intends erecting a plant here for the manufacture of refrigerators.

Buffalo, N. Y.—The Standard Mirror Company, 63 Carroll street, is having plans prepared for a one-story reinforced concrete factory, 80x250 feet.

Alliance, O.—Foundations have been started for a concrete and steel forge shop, to be erected for the Transue-Williams Company. No new equipment will be required.

Cleveland, O.—H. G. Slatmeyer, 203 Lakeside avenue, Northwest, received the contract for constructing a five-story brick and steel factory, for Bishop & Babcock Company, Hamilton avenue. Cost \$50,000.

Lakewood, O.—The Van Dorn Iron Works Company, Cleveland, received the contract for constructing a brick and steel factory addition on Madison and Highland avenues, for the National Carbon Company. Cost \$25,000.

Consul Alfred J. Fleming writes that the new hydro-electric power plant of the Yarmouth Electric Lighting & Power Company, 18 miles from that Nova Scotian city, was put into operation the first of September. The development is 300 horsepower, which operates the car lines and furnishes light and power for private consumers. Nearly all the machinery and equipment came from the United States.

Lifting Magnets for Small Industrial Plants

A new lifting magnet has recently been developed by the Cutler-Hammer Clutch Company, of Milwaukee, which, it is claimed, will make the installation of this modern labor-saving device profitable to many small plants that have hitherto deterred from purchasing a lifting magnet.

The 50-inch magnet which is the

may be used on overhead cranes as well. In the first case it is usually supplied with a yoke and single link suspension requiring only 27 inches headroom, while for use on overhead traveling cranes or gantrys the familiar chain tripod form of suspension commonly used with larger magnets is employed.

In the design of the new magnet care-

absolutely water tight joints, so that the magnet can be used out of doors in all weathers without damage. No combustible material of any kind is used in its construction and it is claimed that the coil of this magnet has been heated, under test, to 470 degrees, Fahrenheit, without detrimental effects.

Figures furnished the manufacturers by steel mills where these magnets are in use show that they are capable of unloading pig iron from gondola cars at the rate of 100 tons per hour at a cost of one-half cent per ton as against five to eight cents per ton for manual labor.

A full description of the various types of lifting magnets manufactured by the Cutler-Hammer Clutch Company is given in a 48-page booklet recently issued by this company.

A Huge Cement Causeway.

The Texas Portland Cement Company, of Dallas, Texas, have been awarded the contract for furnishing all Portland cement required in constructing the causeway across Galveston Bay from Galveston island to the mainland at Virginia Point. The structure is to be approximately three miles in length and is designed to carry a double track steam railway, electric lines, driveway, sidewalks, water mains, telegraph and telephone lines. It is to be built entirely of reinforced concrete, and will cost \$1,500,000. The structure was designed by the Concrete Steel Engineering Company, of New York. This is said to be the largest order for cement ever placed in work of this character west of the Mississippi river. About 100,000 barrels will be used.

American Equipment on Chinese Railway.

Consul Albert W. Pontius reports that on the Chaoshan Railway, which runs from Swatow to Chaochowfu, 24 miles, there are 24 passenger and 48 freight cars. The wheels of these cars are solid steel, chiefly, only a few carriages having wheels of the spoke variety. The Japanese, who were the contractors, supplied all the materials and the cars, the rails and locomotives coming from the United States.

Try a Want or For Sale ad in the Industrial World.



New 43-inch Cutler-Hammer Magnet Handling Car Couplers.

size usually employed by the larger industrial plants for handling pig iron, scrap, etc., is oftentimes too heavy and generally too expensive for smaller establishments. The new magnet meets these objections by cutting both the weight and first cost practically in half, while at the same time the lifting capacity is only about 500 pounds less than that of the larger magnet.

The new magnet is designed especially for use with locomotive cranes, but

ful attention has been paid to the important question of heat radiation, to the anchoring of the coil and to securing

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Wanted, For Sale, Bargains, Etc., in Brief.

POSITIONS WANTED.

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Foundry Foremen and Others wanted to increase their earning capacity 25 to 50 per cent, by taking a course in the mixing of irons with the Milwaukee Correspondence Schools, Goldsmith Bldg., Milwaukee, Wis.

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Situation—An experienced accountant, correspondent and general office man, accustomed to handling men and accounts, desires position where energy and attention to details will merit recognition. Address Postoffice Box 194, Northside, Pittsburgh.

Wanted—Attention, manufacturers. An old-established rolling mill, whose output is high grade bar iron, and black and galvanized sheets, and having ample ground in Pittsburgh district, would be interested in having located on their ground manufacturing adjuncts that use above materials. Parties engaged in manufacture of trade articles from above materials, who contemplate change of location, or engaging in new enterprises, can address office of the Industrial World, Pittsburgh, Pa., giving full particulars as to tonnage used; space desired, etc.

Wanted — A second-hand 15 or 16 h. p. stationary gas engine. Address Norwood Machine Company, Cincinnati, O.

Wanted — Manufacturers wanted to build cold rolled shafting machinery on royalty basis, under United States patent No. 895,364, dated August 4, 1908, described in the Industrial World December 28, 1908. Address John S. Griffin, Roslyn, Washington.

SEALED PROPOSALS.

Machines for Tabulating Agricultural Statistics. — The Director of the Census is considering various types of machines with a view to determining the one best adapted for tabulating the agricultural statistics of the Thirteenth Census. Any one possessing a machine adapted for this purpose is invited to present the

same for test in practical operation at the Bureau of the Census, Washington, D. C., on or before July 31, 1909. For further information address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

Sealed Proposals will be received at the office of the Director of the Census, Washington, D. C., until 2 o'clock p. m., August 9, 1909, and then publicly opened. For furnishing all the labor, materials, and work necessary for the construction in lots of 60, 75, 100, or 125 tabulating machines and delivering the same complete, free of all charges for transportation, at the Census Building, Washington, D. C. right is reserved to accept or reject all bids in whole or part, to strike out any item or items in the specifications, and to waive any defects. For specifications, blueprint drawings, blank proposals, and full information, address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

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Factories Wanted — Grafton, W. Va., will give to manufacturers, a free site on railroad siding, with shipping facilities in all directions, five-cent gas, and an inexhaustible supply of soft water and coal. For information, address Secretary, Grafton Board of Trade.

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For Sale — One second-hand 8x9" Chuse engine, direct connected to 15 k. w. Triumph generator; good condition Electric Machinery & Specialty Company, 204 Franklin avenue, St. Louis, Mo.

For Sale—Rock Drill—Ingersoll make: motor, 1 h. p., complete; shafting, pulleys, hangers, belting, lathes, 1 drill press, cheap; boilers, engines, pumps. William H. Flynn Machinery Company, 404 East Second street, Cincinnati, O.

For Sale—One-fifth interest in an up-to-date manufacturing plant, building a line of special and patented machinery, and having a very extensive jobbing trade. Purchaser can secure a salaried position as engineer, chief draftsman, or salesman. Price of one-fifth interest \$10,000. Address Box 154, care Industrial World, Pittsburgh, Pa.

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ELECTRIC POWER IN GERMANY.**Plans for Utilizing the Waterfalls of Bavaria.**

The following information concerning the agitation for increased electric power in Germany, especially the plants already proposed for the utilization of the lakes and rivers of Bavaria for that purpose, is furnished the Department of Manufactures, at Washington by Consul-General T. W. Peters, of Munich:

The problem of utilizing the public water power of Bavaria for the purpose of converting it into electricity and turning it to account in this way for manufactures and railway traction has been much discussed during the past three or four years. The question is of special importance to Bavaria, as the chief part of the country has no large coal mines of its own and no cheap means of transporting coal from the mining districts of central and western Germany. In central Bavaria railway coal costs about \$5.70 per ton, of which \$1.65 to \$3.30 is paid for transportation. On the other hand, water power converted into electric force is supposed to cost one to two pfennings (about $\frac{1}{4}$ to $\frac{1}{2}$ cent) per kilowatt hour. The principal object of the utilization of water power in Bavaria for conversion into electricity is twofold:

First, the manufacture of a substitute for Chile saltpeter or nitrates. Germany annually imports from Chile about 500,000 tons saltpeter, valued at \$23,800,000, for fertilizing purposes—about one-third of Chile's entire production. After long experiments, Professor Frank, in Charlottenburg, and Doctor Caro have discovered a process through which, by combining the nitrogen of the atmosphere, calcium cyanide is obtained, which is looked upon as a substitute for Chile saltpeter. It can, however, be manufactured only where cheap electric force is available.

Second, the use of electricity for railway traction. Here the chief difficulty is to be found in the varying requirements of railway traffic for traction force. This difficulty can be obviated by constructing, on the one hand, artificial water basins which are to furnish the additional power needed at certain seasons of the year and, on the other hand, special basins which are to furnish the extra force required on single occasions. Another difficulty lies in the fact that all open water basins, as well as rivers, are subject to freezing in winter, so that the traffic may be impeded.

By way of an attempt the Bavarian government within the next couple of years will probably decide to use elec-

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tricity on the railway line from Munich to Partenkirchen, 62 miles.

In 1906 and 1907 a law regulating the utilization of public streams, lakes, etc., was passed. Another law, which is to determine in which cases expropriations are allowed, is now being prepared. The State has offered money from public funds to the communities that wish to construct artificial basins to collect the water for the purpose of converting the power thus obtained into electric force.

In giving permission to private enterprises to utilize the water power of public rivers or lakes the question is always seriously considered whether general interests of the State, of communities, or a group of communities are not endangered. It is considered a rule that the State and communities have the natural right to possess and turn to account the water power of public rivers and lakes, the former for railway traction, the latter for purposes of lighting, street car tractions, for small mechanics, etc. Persons who wish to secure water power merely for the purpose of speculation and reselling it are to be eliminated.

The leading principle of the government is that the public water power available should not be a monopoly of the State, but should be divided between the latter and private capital. The State wishes to reserve for itself as much as it will need for the railways for a number of decades, and furnish the remainder to communities and private industries on long leases, generally not less than 70 years. The State also claims a sort of control over all private water power.

The use of electricity for railway traction is not only to reduce the expenses of the railways and to make the rates cheaper, but also to contribute to the technical progress of the railways.

In all Bavarian rivers about 790,000 horsepower is supposed to be still available, of which about 425,000 horsepower would be needed if all the railway lines of Bavaria should be operated by electric power, or 600,000 horsepower if the lines probably to be built within the next 12 years are included. In view of the large capital invested in the present steam plant of the railways, the government will probably decide on a gradual introduction of electricity. Two plants for obtaining electric power in large quantities have been the subject of lively debate. The one refers to the river Alz, the other to the Walchensee.

A canal at Tacherting is to take about 2,118 cubic feet of water per second out of the Alz and conduct it by canal for about 12½ miles, at the end of which the water is to be discharged in a fall of 330 feet into the Salzach. The result would be 25,000 horsepower for the whole year, or about 50,000 horsepower

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for about 200 days. About 282 cubic feet per second are allowed to remain in the Alz for the purpose of not endangering the fisheries of the river and of supplying the small plants already in existence with the necessary force. A Ludwigshafen plant is trying to obtain the permission of the Bavarian government to utilize the force supplied by the Alz, according to the foregoing plan, for the manufacture of calcium cyanide of nitrates. This enterprise on a large scale would result in a traffic of about 200,000 tons per annum, or about 70 carloads a day.

The Walchensee is a lake in the Bavarian Alps about $4\frac{1}{2}$ miles in length, three miles in width, and 656 feet deep.

A plan has been worked out by the state commission, according to which the waters of the Isar and the Riss are to be conducted in separate canals into the Walchensee. The water of the Riss would have to be conducted either below the Isar, by means of a tunnel, or above it, by means of an aqueduct. This would dispense with an artificial lake, as provided for in other plans, and would result in a constant water power of about 56,000 horsepower. The cost of this plan would be about \$4,500,000. The water of the Isar and Riss would have to be stored in the Walchensee, and to make this possible the tunnel or shaft conducting the water of the Walchensee into the Kochelsee would have to be about 60 feet below the present level of the former lake. Such an enormous structure should be based on solid rock. At the place, however, where the dam would have to be constructed the solid rock is more than 80 feet below the surface of the valley.

Lately the Bavarian government has invited an international participation for plans for utilizing the water power of the Walchensee and the neighboring rivers for electric purposes. Over 30 plans have been submitted. Many of these plans, and in fact some of the best, attempt to preserve the "natural landscape beauties of the country. The artificial lake in the valley of the upper Isar and the lowering of the level of the Walchensee are generally omitted and instead the waters of the Isar and Riss collected in the valley of the Oberrach, where they form a basin regulating the varying supply of water due to the changing rainfall of the season.

Concrete Preserves Iron.

The "Journal of Electricity, Power and Gas," says that concrete covered with sea water for 100 years was recently removed in the harbor at Brest, France. Iron bars embedded in the concrete did not show the least indication of rust, showing that concrete is a perfect preservative of iron, even when placed under sea water.



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HOW THE MARINE TURBINE BLASTED A PENNSY PLAN.

Writing from New York to the Cincinnati "Enquirer," on the development of the marine turbine, "Holland," in a recent letter, recalls the once clearly defined plan of the Pennsylvania for a great steamship terminal at Montauk, on the eastern extremity of Long Island, and suggests that the progress attained in ocean speed by the marine turbine is mainly responsible for the failure to carry out the original plan. "Holland's" letter says:

When Charles Algernon Parsons, who is world-famed because of his perfection of the steam turbine engine, was in New York a few months ago he was reported to have said that he was persuaded that the turbine engines of the Mauretania and of the Lusitania had made it possible practically to reach the limit of ocean speed.

Mr. Parsons spent almost all of the time on the passage from Liverpool to New York in the engine room of the Mauretania.

It was the first opportunity he had had for consecutive and prolonged study of the turbine engine which he perfected. And it was this study which justified him, as he thought, in saying that the speed limit had been reached. He could not conceive of any other marine engine which could make possible a greater average speed than a little over 25 knots an hour.

But since Mr. Parsons's visit to the United States these steamships have done considerably better than the speed limit he spoke of, and the captains of both of them are now convinced that if there be reasonable weather there is no reason why these turbine engines should not be capable of developing energy sufficient to maintain an average of a little over 26 knots an hour.

Second only to the interest in the operations of the flying machines, is the interest which the recent performances of the Mauretania and Lusitania have caused. Even men familiar with the sea and with all of the capabilities of modern marine engines and architecture speak of these performances as sure to be regarded as among the more important developments of the amazing first 10 years of the new century.

For landsmen, who know little of the progress which has been made in marine engine construction, the only manner in which some idea of the speed energy that is in these steamships may be obtained is by saying that they cross the ocean at about the average railway speed of trains in the United States. Of course, exception should be made of the very fast limited trains, and especially those that make the trip between the

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It is not for the purpose of advertising the steamship line or because of mere sentimental or scientific curiosity that these vessels have been installed with the turbine engine in the expectation that they would make the passageway between land and land in a little over four days. Nor is it chiefly to tempt passengers who desire to cross the ocean as quickly as possible that this modern naval construction has been perfected.

It has been done for much the same business reason as led to the placing by two railway lines of trains between Chicago and New York so scheduled that a business day could be saved, not lost, as heretofore had been the case. But in the case of the ocean steamships the chief purpose has been the expediting of the ocean mail service. What is desired is the saving of a business day for correspondence passing between the United States and Europe, or from Europe to the United States.

It has been the hope that steamships could be constructed of such power that it would be possible to mail letters in London on one Saturday morning and have those letters delivered in many parts of the United States on the Friday following, so that there could be mailing of reply letters to Europe the next day.

Business men who have international relations do not need any explanation or argument whereby to prove to them what the value of the gain of one day in international may be. England is so well satisfied that there are great business advantages for England in this expedition that the British government has practically promised to pay the entire cost of the construction of these two swift steamships through advances on account of mails, those advances to be liquidated by the yearly appropriation for ocean mail service.

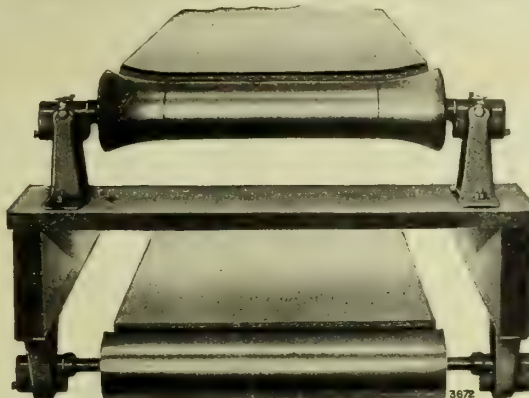
The achievement of these two steamships, one of which landed its Saturday mails from London in New York on the following Thursday evening, and the other of which landed the mails which it received on Wednesday morning in London on the Monday evening following, and in Paris on the morning of the next day, causes renewed discussion, in which some of the ulterior purposes of the Pennsylvania Railroad Company are the important feature.

It has always been a mystery why the Pennsylvania Railroad Company bought the entire Long Island Railroad system, for it does not seem fully to explain this purpose when it is said that the Pennsylvania management desired a grade

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terminal for its Hudson river tunnel system, and could only secure that by taking these systems across Manhattan, under the East river to Long Island City. Nor does it entirely explain, apparently, the Pennsylvania's purpose to say that this company sought, through the purchase of the Long Island Railway system, to bring the Pennsylvania and the New Haven systems into actual physical contact.

Of course, there is the enormous transportation which is offered by the Borough of Brooklyn, one of the greatest manufacturing centers of the United States. But in any event much of that freight traffic, which originates or terminates at the Brooklyn water front, would be handled by the Pennsylvania Railroad.

Therefore, in these renewed discussions as to the purposes of the Pennsylvania Railroad Company, it was inevitable that there should be frequent references to the defeated ambition of Austin Corbin. Whether, had Mr. Corbin been spared the tragedy in his romantic park in New Hampshire that cost him his life, he would now be fulfilling and materializing the dazzling and romantic plans which he had in mind when he purchased all of the railway systems of Long Island, of course, no one can say. But it is to Mr. Corbin that the tunnel systems under the East river and under the Hudson are due. They are, from one point of view, his real monument. In fact, the very engineer, Mr. Jacobs, who was made by both the Pennsylvania and the McAdoo Tunnel Companies, their chief engineer, had earlier been employed by Mr. Corbin to take borings under the East river and under the Hudson, and to make the report on the feasibility of tunnel construction which would give Long Island an artificial and perfect highway with the mainland at New Jersey.

Mr. Corbin was contemplating the organization of a subsidiary company which should undertake this tunnel construction, but his death terminated, of course, his plans. So, also, Mr. Corbin was contemplating the establishment of a great port at Montauk. And when at the time of the war with Spain the great convalescent camp for the soldiers who had been brought low with the tropical fevers of Cuba was established on the sand dunes that rise above Montauk Bay, the various steamships which arrived, bringing soldiers and supplies, demonstrated the accuracy of Mr. Corbin's statement that this harbor was unsurpassed anywhere upon the American coast at least, for the purposes of an American terminal for the swiftest ocean steamships.

At that time the turbine engine for ocean steamships was unthought of, and

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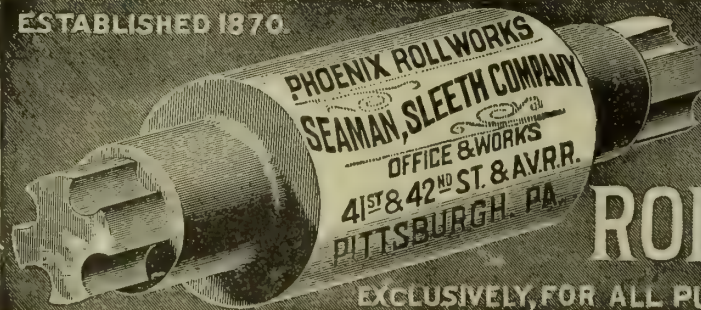
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47th St., Pittsburgh, Pa

that was a very swift steamship which could make an average of 20 knots an hour. But Mr. Corbin figured that if a port were established at Montauk, and another at Milford Haven, on the British Channel, it would be possible to save the better part of a day between land and land.

Now the wonder is whether the Pennsylvania Railroad people, or whether President Cassatt, in purchasing the Long Island and in developing the gigantic tunnel systems, soon to be put in operation, did not also have in view ultimately the perfecting of the plans at Montauk which Mr. Corbin conceived. For if an ocean steamship can now cross from land to land in a little under five days it can make that crossing in about four hours less time if it had its American terminal at Montauk. Railway communication of two hours will bring passengers and mails to New York, and the Pennsylvania tunnel system would also make through passage from the steamship, both for mails and for passengers, to Philadelphia, Chicago, Cincinnati, Minneapolis and other Western points possible.

Some things have happened recently which suggest that the Pennsylvania people do expect some day to see an American port established at Montauk by command and not by natural growth, somewhat as C. P. Huntington commanded that a port be established at Newport News, and it was done. This plan may be in the somewhat remote future, so far as its consummation is concerned, but in view of the recent performances of the Mauretania and Lusitania it is now thought to be not an abandoned plan, but a postponed one.

PORTLAND CEMENT.

Production Increasing, While Natural Cement Decreases.

A bulletin just published by the Geological Survey relative to the cement industry in the United States during 1908 states:

The total quantity of Portland, natural, and puzzolan cement produced last year was 52,910,925 barrels, valued at \$44,477,653. As compared with 1907, whose production was 52,230,342 barrels, valued at \$55,903,851, the year showed an increase of 1.3 per cent in quantity and a decrease of 20 per cent in value. The total Portland-cement production was 51,072,612 barrels, valued at \$43,547,679. This is an increase in quantity of 4.6 per cent and a decrease in value of 19.3 per cent compared with the figures for 1907. Pennsylvania, with 22 producing plants, led with 20,393,965 barrels. The average price per barrel was 85 cents. Of the four types of Portland cement, divided according to the kinds of raw material used, 40.6 per



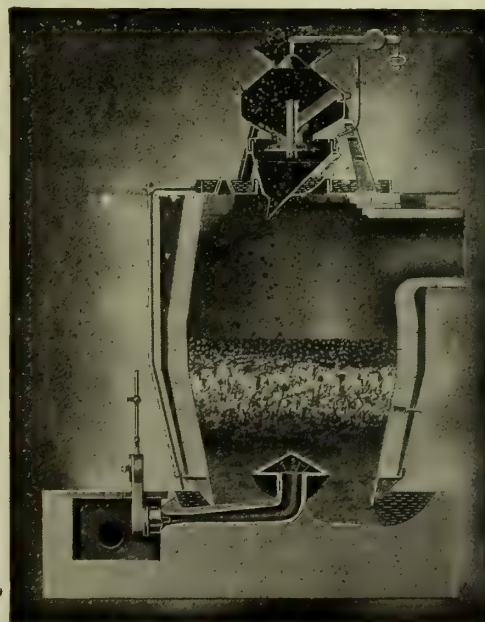
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cent was made from cement rock and pure limestone, 45 per cent from limestone and clay or shale, 5.5 per cent from marl and clay, and 8.9 per cent from slag and limestone.

The production of Portland cement has shown an increase each year. The natural-cement industry, on the other hand, reached its maximum in 1811, with an output of 9,868,179 barrels, since which year it has shown an almost continuous decrease, until now it has become a relatively unimportant factor in the cement situation. The natural cement produced in the United States in 1908 amounted to 1,686,862 barrels, valued at \$834,509, which was a decrease of 41 per cent in quantity and 43 per cent in value under the preceding year. Of puzzolan cement, made by mixing blast-furnace slag and slaked lime, there was manufactured 151,451 barrels, valued at \$95,468, a heavy decrease when compared with the production reported for 1907.

Imports of foreign cement (comprising not only Portland, but all other hydraulic cements) amounted to 842,121 barrels, with exports of 846,528 barrels. Shipments to the Canal Zone for use in the Panama Canal will heavily increase the exports of cement from the United States.

Concrete Buildings in China.

The following information concerning the concrete industry of Swatow is furnished the Bureau of Manufactures by Consul Albert W. Pontius, of that Chinese port:

The construction of houses and walls of concrete is an industry peculiar to Swatow. The work was instituted several hundred years ago, and the absence of any buildings or walls constructed of brick is conclusive proof of its stability and lasting qualities. The industry originated with a French priest, who constructed one of his chapels of this material.

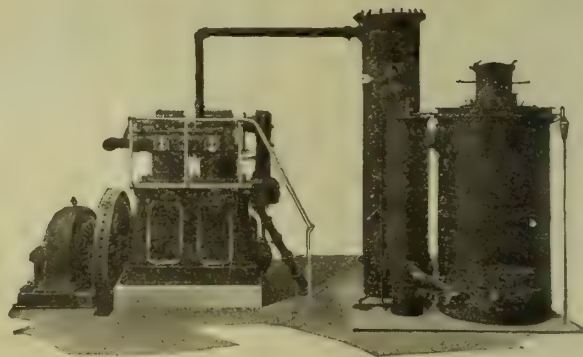
Very small pebbles or shale, sand, and lime are the ingredients of which the material is made. The mixture, after being thoroughly incorporated, is slightly moistened, and then pounded in a rough wooden mold which is elevated in a runway supported by firmly set poles, and in spite of the crude methods employed, a height of 60 feet can be easily reached. When the walls have been constructed, all supports are removed and the concrete is for some days exposed to the air. To this exposure is its characteristic solidity solely attributed. The walls vary from 12 to 16 inches in thickness, and the cost of construction is considerably less than brickwork. The thickness of the walls give absolute guaranty of fireproof qualities. Storehouses and buildings constructed of this material many years ago are conclusive proof of

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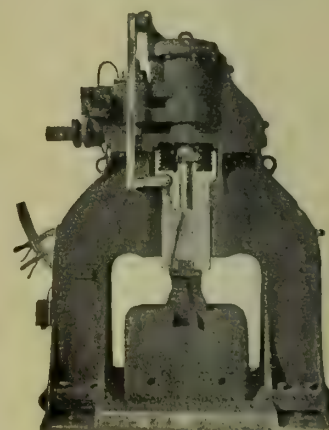
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its strength and durability. No single instance has been known of the accidental collapsing of such concrete-built walls.

In some instances split bamboo poles have been used to reinforce the material, the wood preventing cracks from appearing and adding to the strength. Bamboo imbedded in the concrete in this manner does not rot, and it seems odd that the practice is not more general. Steel or iron reinforcing, owing to the added expense, is never used. The cost of construction is invariably figured at \$9 Mexican per Chinese chang (\$3.67 gold per 8 square feet).

GETTING READY TO COLLECT CORPORATION TAX.

Advices from Washington say Commissioner Casbell, of the internal revenue bureau, is now engaged in the heavy task of providing for the collection of the corporation tax. He is in daily consultation with his deputies and law officers of the Government department regarding the preparation of the blank forms, which must be sent to the various internal revenue collectors and by them placed in the hands of the corporation officers within their respective districts.

Before the blanks are issued they will also be submitted to the secretary of the treasury and attorney general, and the substance perhaps will be communicated to the President. These precautionary measures are necessary in order to render the forms "lawyer proof," because it is quite certain that the new law will never be put into operation without undergoing fierce onslaughts in the courts at the hands of the ablest attorneys in the land.

The indications are that the forms will not be ready for issue for a month at least, and it will meet all needs if they are in the hands of the collectors by the first of November.

Every corporation or stock company save labor, religious and mutual associations, from which no individual derives a profit, and whose net income exceeds \$5,000 per annum, must fill in the blanks under heavy penalty, not only for the corporation itself, but for the derelict officials. False returns will be made the subject of severe punishment.

All returns must be in the hands of the district collectors by March 1 next; within a month the collectors must inform the corporations of the amount of the tax for which they are liable, and that tax must be paid before June 30 each year, else a charge will be made of five per cent of the total tax due and interest at one per cent per month thereafter.

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these returns at the office of the commissioner of internal revenue, but no United States employe is permitted to disclose any information obtained by him in collection of his data.

Even the commissioner does not yet know how much extra assistance he must have in the way of clerical help to gather this great mass of information, though it is quite evident that there must be a great increase in the present force of employes. In addition to the actual clerical help required in handling the returns in the office, it will be necessary to employ a number of experts, who can go into the field and by careful examination of the books of the corporations verify the returns of the officials, whenever there is a reasonable doubt as to their accuracy, and altogether it would appear that the internal revenue bureau is destined to become one of the most important divisions of the United States Government.

NEW PATENTS.

973,782—Alfred E. Johnson, of Denver, Colorado, has invented improvements in zinc-lathes. This lathe is of the type which employs zinc sheets wound on an arbor, the cutting of the shavings from the sheets being done by a side cutting tool. The lathe comprises a hollow rotatable arbor closed at one end and having a hollow journal located in the other end whose outer extremity is bell shaped or outwardly flared to facilitate the escape of the water from the arbor.

932,989—A new pipe-cutting machine has been patented by Frederick Lo Vine, of Dallas City, Ill., in which the knives may be held so as to limit their feeding toward the center of the pipe and vice versa. After the pipe is cut, the cutting mechanism is so constructed as to allow it to be receded upon its horizontal support, so as to allow the pipe to project beyond, so as to receive a stock and die for threading the pipe, or, the means for supporting the pipe rigidly, may be manipulated so as to release the pipe, thus allowing it to be threaded by the use of a stock and die.

932,587—Letters patent have been obtained for improvements in apparatus for bluing metal sheets. The object is, generally stated, to give to metal sheets a dark, smooth, glossy finish. The machine comprises a feeding-out terminus that produces a line of pressure upon a portion of the sheets.

The following patents granted September 7, 1909, are reported expressly for the Industrial World, by J. M. Nesbit, Park building, Pittsburgh:

Friction draft and buffing mechanism,



Rust-Resisting Sheets

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Halfdan Asper, Butler, Pa.; typewriting machine, J. H. Barr, Syracuse, N. Y., assignor to the Smith Premier Typewriter Company, same place; gas engine, F. W. Reeves, Pittsburgh; manufacture of agglomerated bodies from blast-furnace dust, Wilhelm Schumacher, Osnabruck, Germany; smoke stack base for chimney-tops, J. W. Tinstman, Butler, Ind.; rolled metal bar for metal-cutting tools, E. J. Poole, Reading, Pa., assignor to the Carpenter Steel Company, same place; coking-oven, S. B. Sheldon, Buffalo, N. Y.; rotary engine, F. A. Cleveland, New York; conveyor, Harvey Cory and E. P. Dandridge, Pittsburgh; vane-ring for turbines, Birger Ljungstrom, Stockholm, Sweden; pipe-casting machine, J. K. Gunn, Utica, N. Y.; solder for aluminum J. F. Guggenbuhl, Paris, France; process for welding and bonding rails and other metal pieces, (3), C. F. Jacobs, Chicago, Ill., assignor to Jacobs Welding Company, same place; dust-catcher, Julian Kennedy, Pittsburgh; method of treating molten metal, H. W. Partin, Portsmouth, Va.; process for the manufacture of steel, G. J. Stock, Darlington, England; apparatus for testing rail-bonds, C. R. Sturdevant, Worcester, Mass., assignor to American Steel & Wire Company, same place; automatic-stripping ingot-mold, J. T. Morie and Joseph Maganelli, Youngstown, Ohio; apparatus for conveying coke from coke-ovens, Erskine Ramsay, Birmingham, Ala.; elasticfluid turbine, William J. Cartwright, New York; rolling mill, Joseph Fawell, Pittsburgh; ladle construction, G. P. Jones, Youngstown, Ohio, assignor to the William B. Pollock Company, same place; stamping apparatus, L. W. Unger, Clairton, Pa.

SMOKE NUISANCE IN LONDON.

The smoke nuisance in London has been discussed so many times that its continuance without material abatement has been a matter of surprise to most people. A report has recently been issued by the Public Control Committee of the London County Council which explains some of the difficulties hindering public authorities who try to improve the atmospheric condition. The desirability of such improvement is shown by statements from Dr. W. M. Shaw, of the Meteorological Office, to the effect that, owing to its smoke, London loses half its sunshine in winter and one-sixth in summer. About half of its smoke is believed to come from private houses, largely owing to the fact that open grates are mainly used for warming buildings. The County Council is without any direct statutory control in dealing with the smoke nuisance from trade premises, although it is able to exercise an indirect control on account

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of its power of acting in such matters when the sanitary authorities of the boroughs are negligent. In the case of steam locomotives the council is able to act directly, and has done so. The borough councils act under a law passed in 1891 which provides that "any chimney sending forth black smoke in such quantities as to be a nuisance may be dealt with summarily." This act is of comparatively little effect, however, because of the word "black" in the law. Two years ago the Borough Council of

Chelsea brought proceedings against the Underground Electric Railways Company to compel the latter to abate the smoke from the stack of a power station, but lost the case, after a long trial, because the magistrate was not convinced that the smoke was "black" in the meaning of the law. Various other defects in the statutes governing the smoke nuisance exist, such as the impossibility of compelling public buildings to be operated without smoke, and consequently the committee which has

been investigating the matter reached the conclusion that laws should be enacted which are applicable to all cases of smoke emission except those from domestic chimneys, and the authorities should be given power to abate smoke which is not strictly black. The suppression of smoke from domestic stacks is a problem of such difficulty that the committee has asked for time and an appropriation to investigate it carefully. The use of stoves for heating will be opposed by so many London householders



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1901	164,000	1.29%
1902	319,000	1.85%
1903	463,000	2.08%
1904	473,000	1.78%
1905	1,735,000	4.92%
1906	2,076,000	4.55%
1907	2,129,000	4.36%
1908	4,535,000	8.89%
1909	*6,000,000	

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that the contamination of the open grate must be accepted as inevitable for many years to come, and the main problem is apparently to ascertain some way of constructing and running these grates as to make them practically smokeless. In view of the fact, says the "Engineering Record," that half the smoke which is now such a grave nuisance in London comes from these grates, it seems likely that before any great modification of existing laws will be made by Parliament, some means of checking the greatest source of smoke will have to be demonstrated.

BEE-HIVE OVENS UNSUITED FOR BY-PRODUCTS RECOVERY.

Though many attempts have been made to obtain the by-products from ordinary bee-hive coke ovens, practical in coke manufacture, none appear to have been so successful as to warrant commercial adoption. The great objection to the by-product retort oven was mainly on account of the black appearance of the coke, instead of the silvery-grey lustre of that made in bee-hive ovens, and the initial capital cost. Many have undertaken, in England, to build ovens which were to be worked by a colliery company, which took the coke, while the oven builders took the by-products in payment for a number of years, when the property was handed over to the colliery owners, who then took the profit from the by-products. One disadvantage, though this method of installing these types of ovens did much to advance their popularity—was that at the end of the period when the property was to be handed over to the colliery company the ovens required extensive repairs, which absorbed a good portion of the profits from the by-products.

The by-product oven is really a "retort" externally heated, and is usually a long, narrow rectangular-shaped oven, with a door at each end. The side walls are kept as hot as possible. The coal is charged at the top through small openings, when ordinary dry coal is used, but when compressed it is charged into the oven by the charging machine at one of the doors. When charged from the top coal has to be levelled evenly for the full length of the oven. When fully charged the charging holes and end doors are sealed and the top of the oven put in communication with the gas main, and the gas drawn off as it is generated by the heat of the oven. The coking process commences at each side next to the hot wall, and goes on through the coal to the centre, with the result that, on being pushed out of the oven, it falls into halves, as though split down the center. Another advantage claimed for coke made in these ovens is that, owing

to pressure due to the weight of the charge, the density is increased, and is much more so in cases where the coal is compressed into large cakes before being charged into the ovens.

Subscribe for the Industrial World.

A press telegram from Vienna, says that the total output for 18 months of the government's radius mines at Joachimstal—10 grammes—has been sent to the ministry of public works. It will be used for scientific purposes. It is valued at several thousands of dollars.

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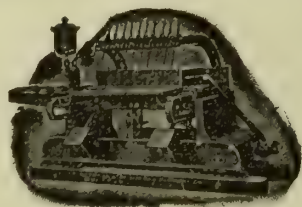
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Makers of the Largest Rolls

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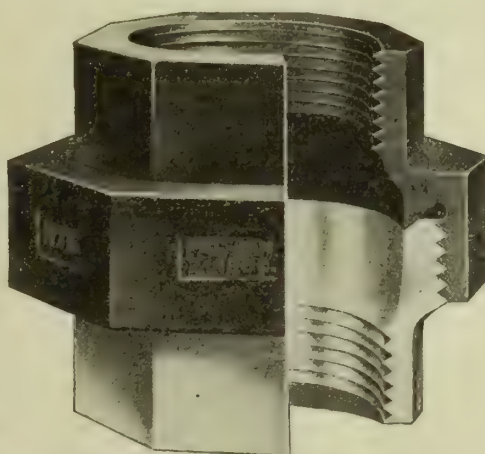
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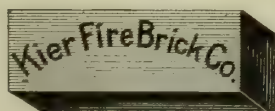
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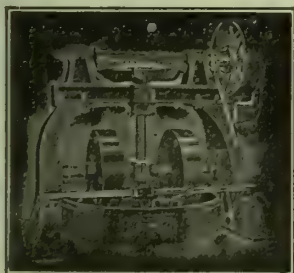
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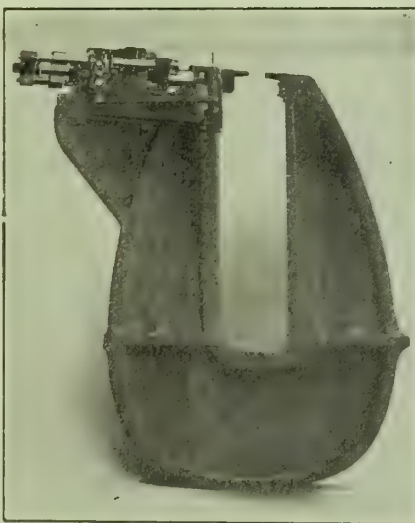


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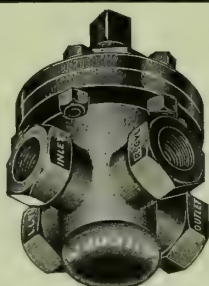
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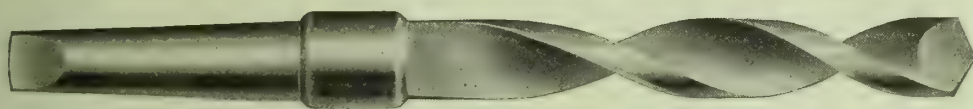
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43d Year. No. 40.

PITTSBURGH, PA.

MONDAY, OCTOBER 4, 1909.

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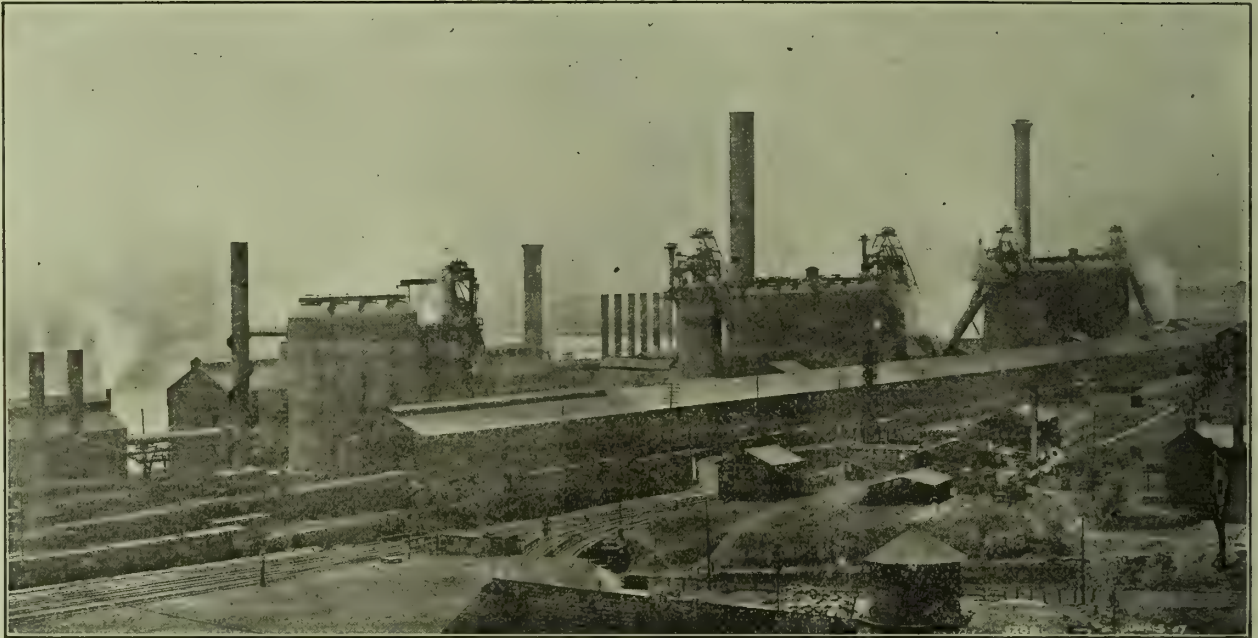
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INDUSTRIAL WORLD

FORTY-THIRD YEAR.

PITTSBURGH, PA., OCT. 4, 1909.

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Summary of General Iron and Steel Markets

GENERAL ADVANCE IN FINISHED PRODUCT LINES AS A RESULT OF CONTINUED UPWARD TREND OF PIG IRON AND SEMI-FINISHED STEEL—SHEET, TIN PLATE, WIRE, PIPE AND TUBING ALL MOVED UP BY STEEL CORPORATION—RAIL PROSPECTS BRIGHTER

THE close of the week witnessed the general advance in finished steel lines by the combine interests which has been predicted for the past six weeks as a natural result of the rapid rise in pig iron and unfinished steel. The trade, despite frequent warnings, had not been expecting these price rises before the middle of the new quarter; but trade conditions gave every evidence that they would be easily sustained.

The American Sheet & Tin Plate Company advanced black and galvanized sheets and tin plate \$2 a ton, the new prices becoming effective immediately. This puts sheets on the basis of 2.30c for No. 28 gauge, and tin plate on the \$3.50 basis for coke tin plate, some of the independent tin plate makers simultaneously putting up their prices to \$3.60 and \$3.65.

The National Tube Company announced a corresponding advance, \$2 a ton on wrought pipe and boiler tubes; while the American Steel & Wire Company added \$2.85 a ton on steel galvanized wire. This wire advance affects principally the users of telegraph wire, and does not extend to barbed and other

lines of ordinary wire, or wire nails.

The Carnegie Steel Company also moved up its prices on steel bars during the week to 1.45c for general business, which is now the minimum of the market—a number of the independents having been asking 1.50c. This is the second advance in steel bars in two months, and it is considered certain that an advance in the price of plates and structural shapes will follow in a few days.

These advances followed the most active month in the pig iron market since the boom days of 1907. During the closing week of September, Bessemer held its own in the Pittsburgh market, selling at \$18 Valleys for prompt delivery, though some furnaces were willing to make the \$18 price through the first quarter of 1910, and 25,000 tons changed hands for the first half of that price. Furnace men warned the trade, however, that by this week \$18.50 would probably be the minimum for 1910 Bessemer. Foundry and basic iron became more settled at \$16.75 to \$17 for the former and \$16.50 and upward for the latter, for prompt delivery. Considerable foundry iron was taken for next year on the basis of \$17, Valleys, though several furnace interests were out of the market for

anything under \$17.50 for next year's delivery.

The most cheering information from the sales offices came in the form of the announcement of extensive rail buying, which will probably mean full time for all the rail mills of the Steel Corporation for the remainder of the year, including those of Pittsburgh district, which still are working far under maximum capacity. In six days, the following rail purchases were announced by the big roads:

Pennsylvania—200,800 tons.
Chicago Great Western—20,500 tons.
St. Paul—75,000 tons.
Missouri Pacific—10,000 tons.
Northern Pacific—10,000 tons.
Mexican Extensions, Harriman Lines—12,000 tons.

In addition to this, the New York Central, the New Haven System, the Grand Trunk and other Eastern lines are in the market for an aggregate of 300,000 tons more. Rail orders on the books of the Illinois Steel Company amount to 500,000 tons. Of the Pennsylvania's order, about 100,000 tons are expected to go to the Steel Corporation mills—the remainder being divided among the Bethlehem, the Cambria, the Lackawanna and the Pennsylvania Steel Company. The Northern Pacific's order will be rolled by the Lackawanna, while the Steel Corporation will turn out the Mexican order.

Much of the confidence exhibited by the steel rail and wire men is the result of forecasts of extensive traction construction in different parts of the country. It is said there are orders for more than 100,000 tons of standard rails pending from trolley interests for new construction. Rail men expect the trolley construction in 1910 to be the heaviest in the history of the country. The trolley activity also affects the steel wire lines.

Large pipe orders from Western points, to be used in pipe line work, insure steady operation of the tube mills.

News from abroad shows that the effect of the American prosperity is being felt in foreign markets. The German Steel Works Association, according to a dispatch from Dusseldorf, has announced orders on hand September 10, of 550,000 tons in excess of 1908. This is a gain of 200,000 tons in a month.

About 26,000 tons of foreign spiegel-eisen has been marketed in this country, and German and English furnaces are offering to sell basic pig, to meet American specifications, at \$17.50 on dock, Philadelphia.

Pipe Line Enterprises in West Indicate Busy Winter in Tube Mills

PIPE MAKING INTERESTS SECURE LARGE ORDERS FOR NEW WORK—CAPACITY OF MILLS MAY BE TESTED BEFORE NEXT SPRING.

The Kansas Natural Gas Company, a Pittsburgh corporation with T. N. Barnsdall at the head, it was announced last week, had awarded the contract for 60 miles of 16-inch steel pipe for the new gas line which will extend from Joplin, Mo., into the Oklahoma gas fields.

This pipe is to be made in Pittsburgh. The contract, in order to have it rushed through as rapidly as possible, will be divided into two, one-half going to the National Tube Company mills in McKeesport, and the other half to the Spang-Chalfant Company, of Pittsburgh.

The Barnsdall interests recently secured an injunction in the United States court against the State of Oklahoma, restraining it from interfering with the building of pipe lines and the transporting of gas out of the State. This injunction became operative on September 27. It is the intention to push the construction work on the new pipe line and lose no time in getting the gas to the Joplin consumers.

Another order for 110 miles of steel pipe was secured during the week by the Spang-Chalfant interests from the Consumers' Light & Heat Company, Fort Worth, Texas.

Much of the new Texas order will go into the service pipeage for the city of Fort Worth. The gas for this city is being piped from what is known as the Henrietta fields. The distance is 90 miles from Fort Worth, and the main feed line from there now being laid was rolled by the Pittsburgh company last spring.

The Ohio Fuel Supply Company has ordered 10 miles of 12-inch pipe for a gas line to be laid from its main line to Hamilton, O.

Interests in the South Atlantic States promise to add materially to this pipe tonnage before the middle of the present month. An extension of the Brooklyn water works system will involve a heavy tonnage of pipe, both riveted steel and cast iron being advertised for.

Favor State Pipe Line.

Press reports from Guthrie, Oklahoma, state that members of the legislature have committed themselves for a proposition to build State oil pipe lines from

the Oklahoma fields to Port Arthur, Texas, the lines to be common carriers. Senators assert that enough members of the Legislature have been found favorable to insure the passage of the measure.

The Legislature will be asked to authorize a \$2,000,000 bond issue. A four-inch pipe for refined, and an eight-inch pipe for crude oil are planned.

Pipe Line for Beaver County.

The H. C. Fry Glass Company, Rochester, Pa., has arranged for a supply of fuel for its factory by the purchase of wells and leases in Butler county, east of Harmony, Pa. The company has arranged to lay a 6-inch line from the field to the factory and last week placed a contract with a Pittsburgh firm for 15 3-10 miles of merchant pipe. Delivery of the pipe will begin this week at Harmony, as the first seven miles of the line will be laid from that point, the remainder of the pipe will be shipped to Rochester.

Working on Railroad Orders.

The Reliance Tube Company's plant, at Brackenridge, Pa., which recently became a part of the Allegheny Steel Company, is planning extensions that will give it a capacity of about 2,000 tons monthly. One of the principal products of the plant, is iron boiler tubing, for which the company has large orders from the Pennsylvania Railroad Company, and other heavy consumers.

Contracts on River Locks.

The J. & J. B. Milholland Company, Pittsburgh, has been awarded the contract for installing the machinery necessary to operate the locks at Dam No. 1, Monongahela river, Pittsburgh. The contract includes eight steam engines.

The company has about completed the equipment of machinery and other appliances for Dam No. 5, Monongahela river and is working on equipment for the improvement being made on the Ohio river.

For McKeesport Extension.

Contracts were awarded September 28 by the McKeesport Tin Plate Company, for the steel buildings that are to cover the new extensions to that plant at Port Vue, and which will require a huge frame with between 1,000 to 1,200 ton of structural steel in it. The Ritter-Conley Manufacturing Company, of Pittsburgh, secures the work, which is to be started at once. The buildings are intended to

cover an installation of 10 new mills for the tin plate company, giving it 20 mills instead of 10 mills as at present.

The additional mills have already been ordered from the Mesta Machine Company, including the power machinery to operate them. The entire equipment and buildings will be the product of Pittsburgh shops.

REPUBLIC GETS SITE.

Secures Additional Ground Adjoining Its Plant in Youngstown.

Preparatory to further extensions at its Youngstown, O., plant, the Republic Iron & Steel Company made a proposition to the Youngstown councils, offering to build an overhead bridge, costing approximately \$175,000, in exchange for the vacation of 200 feet of streets adjoining their works, to secure a site for the erection of tube and finishing mills which the company told the city would represent an outlay of \$2,000,000.

The company has secured large blocks of private property adjoining its plant, part of it having been formerly occupied by the American Tube & Iron Company. The city accepted the company's offer.

The foundation for the new 10-inch mill at the Brown-Bonnell plant, at Youngstown, has been completed. The contract for the steel structure has been let and will be hurried to completion. The product of this department, will be made into tubing at the Lansingville works.

It is reported that the Republic Iron & Steel Company will shortly let a contract for two additional blast furnaces and six open hearth furnaces at Haselton and Lansingville. Also it is said that six additional open hearth furnaces will be erected after the first half dozen are in operation. Two lapweld and two butt-weld furnaces are now provided for in the contracts.

Steel for Ashtabula Docks.

The Jones & Laughlin Steel Company, during the week, received an order for steel plates and shapes for the construction of a new iron ore docks at Ashtabula, for the Union Dock Company, a concern largely owned by Pittsburgh interests. The order amounts to 1,700 tons. The ore-handling machinery is to be built by the Wellman-Seaver-Morgan Company.

Foundrymen's Association to Meet.

The regular monthly meeting of the Pittsburgh Foundrymen's Association will be held at the Carnegie Technical School, on Monday evening, October 4, at 8 o'clock. Edgar A. Custer, president of the Tacony Iron Company, Philadelphia, will address the meeting on "Permanent Moulds." Mr. Custer will have

four moulds in operation, using iron from the cupola in the school foundry. Other moulds will be fully illustrated by moving pictures and lantern slides.

Permanent moulds is a feature of foundry practice that is receiving attention from the trade throughout the country, as complicated castings are being successfully made in them and the demonstrations to be made by Mr. Custer, will be of unusual interest.

EQUIPMENT NEWS.

New Pump at Lake Erie Shops.

Pittsburgh representatives of the Laidlaw, Dunn, Gordon Company, are installing a steam-driven cross-compound air compressor with a capacity of 2,000 cubic feet of air per minute in the power plant of the Pittsburgh & Lake Erie Railway Company's shops at McKees Rocks, to supply power to the new pneumatic equipment being installed.

The shops are being operated double turn in some departments, largely on new work for the road. An order for 10 shifting locomotives has been about completed, and last week another order for 15 additional new locomotives was received at the shops.

Scale and Supply Operations.

A report was published in the daily press last week to the effect that operations had been resumed in the foundry department of the Standard Scale & Supply Company's plant at Beaver Falls, Pa. The report is misleading to the extent that the plant has been continually in operation during the last two years, and was not closed down during the recent depression. The foundry department and all other departments of the works are being operated at capacity, and the company is well supplied with orders.

Foundry Building Completed.

The new building being erected by the Springfield Foundry Company, Smallman street, Pittsburgh, is about completed and the cupola in the building is in operation. The building is a brick and steel structure 80x120 feet, and will add materially to the appearance and capacity of the plant.

The structural steel work of the building was constructed and erected by W. N. Kratzer & Company, Pittsburgh. The brick work and the equipment will be completed by October 15.

For New Open Hearth Furnace.

Announcement was made some weeks ago in the Industrial World, of the organization of the Lawrence Iron & Steel Foundry Company, recently incorporated under the laws of Pennsylvania. The corporation has acquired the interests

of the Yagle Foundry & Machine Company, limited, located at Thirty-second street and the Allegheny Valley railroad, Pittsburgh, and will, under the same management, carry on the retiring company. The new company has placed an order for the erection of an open hearth furnace and will, in the near future, have in operation a steel foundry department for the manufacture of open hearth steel castings. William Yagle is secretary of the new company.

New Equipment Agents.

W. G. Swift and R. S. Utely have engaged in business as the Penn Machinery & Equipment Company, with offices in the Stevenson building annex, Pittsburgh. The company has taken over the business of the Chapman-Robinson Company and will represent manufacturers of gas and steam engines, compressed air equipment, pneumatic tools, electric lighting plants and machinery.

Machinery for Export.

The Pittsburgh Conveyor Machinery Company, Pittsburgh, has received an order from a New York engineering firm for a crusher, rotary dryer and belt conveyor outfit for export shipment to France.

The order is for a duplicate of an outfit shipped by the same firm to Spain about a year ago.

To Install New Crane.

J. A. Graff & Company, Fulton building, Pittsburgh, has been awarded a contract for installing a five-ton electric traveling crane in the new plant being erected by the Independent Steel & Wire Company, at Kenova, W. Va.

Increasing Steel Output.

The La Belle Works of the Carnegie Steel Company, Northside, Pittsburgh, will be operated double turn beginning this week. The forging department of the plant was operated double turn last week and additional orders for high-grade merchant, tool and machinery steel, necessitated the operation of the plant at capacity.

The McCutcheon mill adjoining the LaBelle plant and owned by the same company was also ordered on double turn this week, owing to the increase in orders for angles, small bar sections and other products of the plant.

Open Pittsburgh Offices.

The Union Sheet & Tin Plate Company, has opened offices in the Farmers Bank building, Pittsburgh. The company has plants at Marietta, Ohio, and Hazelton, Pa.

Try a Want or For Sale ad in the Industrial World.

AT NEARBY-PLANTS.

Enlarging Enameled Works.

The Wheeling Enameled Iron Company, manufacturers of bath tubs and sanitary ware, Elm Grove, W. Va., has awarded a contract to the John Eichleay, Jr., Company, Pittsburgh, for remodeling the foundry building and making a number of other improvements to the plant. The roof of the foundry building 70x200 feet, will be elevated and runways installed for traveling electric cranes. A contract has been placed with the Miles, Bement & Pond Company, for two 5-ton cranes.

Schreiber, Johnson & Risacher, Pittsburgh engineers, have been awarded the contract for installing a sand handling plant of modern design, and the castings for this part of the equipment will be made by the Scottdale Foundry & Machine Company, Scottdale, Pa.

A gas engine of 150 horsepower will be installed in the power plant and considerable additional equipment will be placed in other departments. Samuel E. Duff and Gulick, Henderson & Company, of Pittsburgh, are consulting engineers.

New Cranes for Aliquippa.

The Jones & Laughlin Steel Company is asking for estimates on 12 electric traveling cranes, to be installed in the new plant at Aliquippa. The cranes vary in size, and the estimated cost of the installation is \$30,000.

The Pennsylvania Railroad Company, is taking bids on the erection of two 70-ton electric hoists, to be installed in the Southside shops, Pittsburgh. The hoists are to be used in removing locomotives from their trucks while repairs are being made.

To Equip Nail Mill.

Pittsburgh people are said to have on foot a project for the establishment of a nail mill at Ellwood City, Pa. Representatives of the projectors have inspected the old buildings of the Ellwood City Glass Company, which were abandoned July 1, last. The terms of the deal have not yet been agreed upon.

For Roundhouse Equipment.

The Western Allegheny Railroad Company is having plans prepared for the erection of a round house and repair shops at Queen Junction. Thomas Liggett, Diamond National Bank building, Pittsburgh, has charge of the improvements.

In Operation January 1.

The plant of the Wheeling Metal Manufacturing Company, at Moundsville, W. Va., is to be in full operation January 1. Construction work is completed on

one building, while the steel work on the other building was commenced last week.

TO SHIP BY WATER.

American Bridge Company to Use River Instead of Railroad.

The American Bridge Company, and, it is said, some other subsidiaries of the Steel Corporation in Pittsburgh district, have decided on using water transportation as much as possible until the railroads reduce their rates.

It is announced that water transportation is to be used by the American Bridge Company in transporting the new bridge for the Missouri river at Kansas City. There will be 6,000 tons of this structure to be sent from the corporation's mills at Ambridge, Pa. Six model barges will carry the bridge and six feet of water in the Missouri from its mouth to Kansas City will be sufficient. The cost of this transportation will be less than half that which the railroads asked.

Carnegie Company's Hospital Staff.

The Carnegie Steel Company has put into operation a new plan to provide surgical assistance without cost to the men. The company has established a complete surgical staff to have charge of all of its plants. This staff will act independently so far as surgeons and plants are concerned. Dr. W. S. O. Sherman, one of the younger members of the West Penn Hospital surgical staff, has been appointed chief surgeon at an annual salary of \$10,000, one of the largest ever given to a surgeon in this section of the country.

In addition to his salary Dr. Sherman will have the power to appoint 27 additional surgeons, one to be stationed at each of the company's plants at a fixed monthly salary. In order to carry out this plan and simplify caring for the injured an entire ward that has been unoccupied at the West Penn hospital has been secured. All patients will be taken there instead of being distributed to the various hospitals of the county.

Switch and Signal Club.

The first of the regular fall monthly meetings of the Uniswitch Club, composed of officers and heads of departments of the Union Switch & Signal Company, was held September 30, at the Hotel Dorset, Pittsburgh.

"The Staff System" was the subject of a talk by T. H. Paternall, the ins and outs of the workings of the concern's plants being discussed and suggestions given for the benefit of the service.

Try a Want or For Sale ad in the Industrial World.

COKE MERGER FAILS.

Options Expire October 1, Without Being Taken Up by Promoters.

Word went out from Connellsville on last Friday that the proposed merger of independent coking interests of the Connellsville region has been abandoned, for the present at least. Circular letters explaining the new turn of events have been sent out by John W. Boileau, chief promoter, from his Pittsburgh office. The project may be resurrected, but not in the near future. Options on the coke plants expired on Friday, October 1.

Various reasons are assigned for the failure of the merger. If the capital for backing it had been ready when announcement of the plans was made, and the merger hurried through, it is believed it would have been a go. As business has been picking up and coke prices have been rising the independent operators have shown a growing inclination to hold onto their property. It is said all the necessary financial backing was not obtained. As at first proposed the merger would have required \$60,000,000. It was proposed to take over the holdings on a cash basis, but this was later abandoned and a proposition made to the operators to accept part cash and the remainder in stocks and bonds. The latter proposition was not well received. Companies that would have sold on a cash basis refused to consider the other proposition.

Under date of September 30, Mr. Boileau sent formal notice to the companies interested that the holders of the options have decided to allow them to expire.

The circular says in addition:

"In surrendering the rights under these options, we kindly ask the various vendors to bear with us and to keep in mind the situation, as I am informed it is quite possible a renewal of the options, or the giving of a new option will be asked for in case definite plans are worked out. Several vendors have offered us a renewal of options on a cash basis and if this can be arranged, it is quite probable you will hear from the parties interested at a later date."

The return of prosperity has produced a feeling of confidence among the operators. While many operators would willingly enter a combine to regulate prices there are many who can see years of prosperity ahead, and consequently care not whether there is a merger or not.

To Build Coke Plant.

The Franklin Coke Company, organized at Uniontown, Pa., September 27. James S. Braddock was chosen president; W. H. Echard, vice president; Paul Mauzy, treasurer; Charles Kendall, secre-

tary. The company was organized with a capital of \$60,000. A plant of 40 ovens is in the course of construction.

OPERATE MORE MILLS.

Striking Tin Workers See Shenango Plants in Operation.

Striking tin workers watched operations by the American Sheet & Tin Plate Company in the plants at New Castle and Sharon, Pa., increase largely during the week just ended. The company has all the sheet capacity working it desires and is putting on additional tin mills rapidly. The company's reports September 29 showed 153 tin mills in operation. No move has yet been made to start the Martin's Ferry, O., plant, which has been idle since July 1. The Mercer sheet plant of five mills, at South Sharon, will be started within 10 days.

Strikers against the "open shop" order of the Youngstown Sheet & Tube Company, at a meeting in Youngstown, September 27, voted to continue the strike. The mills are running practically full, with non-union men. The Sheet & Tube company will retain the men imported to break the strike, but will take back most of the strikers when vacancies occur. Several hundred sheet workers will be needed about January 1, when the eight new hot mills now being erected, are started up.

The National officers of the Amalgamated Association, with the purpose of further agitating the situation, sent out circulars during the week to non-union iron workers, reading:

Beginning with the blast furnace industry and running through all of the departments of the steel making branch, including tube, structural, rail, steel bar and other unorganized departments, there is a condition of absolute helplessness on the part of the workers that makes the application of the law of self-preservation an impossibility. This condition is the natural effect of a cause—lack of organization. Believing that the men in the iron and steel industry realize the crying need of such an organization the Amalgamated association is extending an invitation to all steel, tube and furnace workers to join its fold. The United States Steel company realized \$600 in dull times on the labor of each employe. With organization better wages and the elimination of a 12-hour day and Sunday labor will result. Fight for the emancipation of yourself and fellow workmen from the industrial tyranny of the steel masters. Let your motto be "An injury to one is the concern of all."

To Operate "Open Shop."

Along with the announcement, September 29 that its new mill at Niles, O., will commence operation October 15, the DeForest Steel Company, manufacturers of sheet iron and tinplate, told applicants for jobs that the plant will be operated on the open-shop basis. The

Amalgamated scale will be paid in all cases, with the exception of rollers, and here the difference will be but a few cents a day.

Machinists Back at Work.

After several days off duty, the machinists employed at the Brown-Bonnell and Bessemer plants of the Republic Iron & Steel Company, at Youngstown, declared off their strike September 27 and returned to work. The men surrender in part the demand for time and a half on Sundays and in return will receive an advance of two cents an hour. This increase will net about \$1.40 a week above the old scale.

Trouble Soon Settled.

Fifty toolmakers at the plant of the Driggs-Seabury Ordnance Corporation at Sharon, Pa., on September 27, declared a strike because the night crew refused a reduction in hours from 62½ a week to 54. The company made partial concessions, and the men returned to work after a day's idleness.

NEW OPEN HEARTHES.

Extensions Announced by the Sharon Steel Hoop Company.

The Sharon Steel Hoop Company, which recently issued \$1,500,000 additional stock and added Severn P. Ker, formerly of the Republic Iron & Steel, to its executive staff as general manager, has placed a contract for structural steel buildings with the Pittsburgh Bridge & Iron Works, Rochester, Pa., comprising a 60-foot extension to the present open-hearth building, a 12-foot extension to its lean-to, a 75-foot extension at one end of the bar mill and a 43-foot extension to the other end, where it is 84 feet wide. A new 35-ton basic open hearth furnace and three-bar heating furnaces are to be added by the company's own organization, which will give it four acid and two basic open hearth furnaces and increase its capacity in billets or sheet bars about 2,000 tons per month.

During the past year the Sharon Steel Hoop Company has been making corner bead for fireproof construction, and has lately added a new building in which it is now turning out studding. The hoop and band department is being operated to full capacity.

For Two More Freighters.

Contracts have been let at Cleveland, for two more freighters, for the Rutland Transit Company, to be finished by July, 1910. The contract went to the American Shipbuilding Company. The Carnegie Steel Company will furnish the plates.

FOR ALL-STEEL CARS.

Standard Company Said to Be Preparing for Large Extension.

It is said the Standard Steel Car Company is preparing for large extensions at its plants at Ellwood City and New Castle, with the ultimate intention of entering into the manufacture of the all-steel passenger car. Additional land has been secured at New Castle, and more is under negotiation. The plans for this new work are separate from the extensions now under way at the main plant of the company at Butler.

A test all-steel street car was turned out at the New Castle plant some time ago, and is being tried out in Pittsburgh. It is reported that the under-frame department may be moved away from New Castle in order to make room for the making of the all-steel street cars. The Pittsburgh company is reported to have given an order for 30 of the new cars.

At Ellwood City, the council has passed an ordinance giving the company extensive grants of streets for use in erecting additions to the Steel Car Forge plant there.

For Car Equipment.

The New York, Ontario & Western, in the specifications for the 500 steel hopper gondola cars to be built at its Middleton shops provides for steel underframes, from the Ralston Steel Car Company, Columbus, Ohio. The special equipment for the cars includes: Bolsters, truck, cast-steel, American Steel Foundries Company; brakes, Westinghouse Air Brake Company; brake-beams, Buffalo Brake-Beam Company; brake-shoes, American Brake-Shoe & Foundry Company; draft gear, W. H. Miner Company; end sills, cast-steel, Commonwealth Steel Company; journal boxes, T. H. Symington Company; springs, Railway Steel Spring Company; trucks, Andrews side frame, Barber roller device; wheels, National Car Wheel Company.

New Pacific Coast Plant.

The W. L. Holman Company, freight and passenger car builders, San Francisco, Cal., has consolidated with the Pacific Car & Foundry Company and will erect a new plant at Richmond, Cal., to cost about \$300,000. A tract of 20 acres of land has been secured upon which the new plant will be erected as quickly as possible. The capacity of the new plant will be 10 freight cars a week and 10 passenger cars a month.

New Equipment Ordered.

The Baltimore & Ohio Railroad Company has ordered 500 refrigerator cars from the Whipple Car Company, of Chicago; 1,000 box cars from the Standard

Steel Cor Company, Butler, Pa., and two electric locomotives from the General Electric Company, Schenectady, N. Y. The report that the Pennsylvania has ordered 2,000 additional cars is officially denied.

The Texas & South-Eastern, has ordered 50 thirty-ton flat cars from the American Car & Foundry Company, and is also building 25 cars of the same class in its shops at Diboll, Texas. The Chesapeake & Ohio has ordered 20 steel passenger cars from the Standard company.

BRIDGE PLANT AT GARY.

Reported Project by U. S. Steel.

A report is current that the United States Steel Corporation has plans drawn for the erection of a structural plant at Gary, Ind., where it will eventually centralize the present shops at Chicago and Detroit.

The project is said to have been definitely worked out by the management of the American Bridge Company. Some years ago the plan was adopted of centralizing the plants in Pittsburgh district at Ambridge. The eastern work of the company is well taken care of at the Pencoyd works. The new project contemplates establishing the third main plant in the chain at Gary.

To Enlarge Youngstown Plant.

Plans have been adopted by the Carnegie Steel Company, which will practically double the capacity at the Ohio plant at Youngstown, O. The company has just completed the building of an open hearth plant, with new plate mills and two blast furnaces. The original appropriation for this work was \$10,000,000. The work reached easily \$5,000,000 more.

Now, it is said, there will be added to the plant at least six open hearth furnaces, with new finishing mills, and two new stacks, making the number of blast furnaces eight in all.

To Use Electric Power.

The Woods-Lloyd Company, South Thirtieth street, Pittsburgh, one of the largest manufacturers of clay products on the Southside, has closed a contract with the Allegheny County Light Company, to supply it with 220 electric horsepower for operating its plant, which was formerly operated by gas engine drive. The changing of its system from gas engine drive to the central station electric power service, was made after a thorough investigation as to the respective advantages of each source of power.

Try a Want or For Sale ad in the Industrial World.

Start Work on New Furnace Group At the Carnegie Homestead Plant

MORE OPEN HEARTH CAPACITY TO BE PROVIDED WITHOUT DELAY—STEEL CORPORATION EXTENSIONS PLANNED.

Ground was broken October 1 for the construction of four new open hearth furnaces for the Carnegie Steel Company's works. They are to be added to what is known as No. 4 open hearth works, and increases the group to 16, all of which are 50-ton capacity.

The purpose of increasing the capacity is to supply steel for a new plate mill which is also to be erected this fall for rolling smaller sized plates and also to supply steel for the enlarged steel car wheel plant. These steel wheels are made under the design and patents of E. E. Slick, chief engineer of the company.

The total outlay for these improvements will reach approximately \$1,500,000. The additions to the wheel plant being intended to make the works almost equal in capacity to the Schoen-ville wheel works at McKees Rocks, which is also owned by the Carnegie company. The open hearth furnaces will occupy ground facing Eighth avenue, Homestead.

The Carnegie Steel Company will furnish all wheels during 1910 for cars built by the Norfolk & Western at their own shops.

Schwab to Get Texas Ore.

Press reports from Austin, Tex., state that F. G. Pettibone, general manager of the Gulf Division of the Santa Fe Railroad, has made application to the Railroad Commission for authority to establish a low export rate on iron ore from points on its line to Port Bolivar, Texas.

Mr. Pettibone stated that a contract is pending between his road and Pennsylvania iron manufacturers for the shipment annually of not less than one million tons of iron ore from the East Texas fields to Pennsylvania, for a period of 50 years, by way of Port Bolivar and thence by water to the New Bethlehem works. This contract, he said, would be signed if the commission would authorize a lower port rate. The application was granted by the commission.

Charles M. Schwab and associates recently obtained control of about 50,000 acres of iron ore lands in Cass county, Texas, and the ore shipments are to be made from there. It is estimated that the Schwab holdings aggregate 100,000,000 tons of ore. The Santa Fe will build

an extension of 40 miles from Long View to the ore fields. Shipments will begin about January 1.

BETHLEHEM'S PROGRAM.

Duplex Process May Be Utilized for Bessemer Converters.

An announcement will be forthcoming from the Bethlehem Steel Company during the next two weeks as to the construction progress by which President C. M. Schwab, as he announced some weeks ago "expects to spend \$5,000,000."

The plans for the extensions are only partly decided on. The company will build two modern blast furnaces in addition to the one now under construction, which it is expected will be completed by February, 1910. Contracts for the other two are to be let at once.

The new steel works will either consist of 10 50-ton open hearth furnaces, duplicating the existing Saucon plant, or of two 20-ton Bessemer converters. If the latter are decided upon it is the expectation that the operation of the duplex process will double the output of the existing open hearth furnaces.

Bids have been asked this week on a 28-inch universal mill, a 22-inch bar mill and a 22-inch structural mill, together with roll tables, conveyors, heating furnaces, etc., all of these additions and the buildings containing them being erected at the old or Lehigh plant of the company.

The improvements just decided upon and the blast furnace work now in progress represent an outlay of \$6,000,000, and will double the capacity of the South Bethlehem works in rails and structural shapes.

The machinery inquiry for new rolls, with the auxiliary machinery alone means the expenditure of about \$1,000,000. As an indication of the fact that the new construction work is to be rushed, the Bethlehem Company, in asking for proposals, requested that deliveries be made very promptly. A large tonnage for new buildings to house the extensions will be supplied by the Bethlehem Company itself.

Testing Electric Locomotive.

Two of the 48 electric locomotives being built by the Westinghouse Electric & Manufacturing Company for the Pennsylvania Railroad for use in the Hudson river tunnel were given a trial October 1, at the works and reported to be successful. Several are in readiness for delivery.

COMBINE IN THE SOUTH.

Tennessee Company Outlines Extensive New Work.

While the announcement of President Crawford, of the Tennessee Company with regard to immediate expansion plans in the Birmingham district, has been anticipated at Birmingham, his detailed and official statement carries with it the implied affirmation of the Steel Corporation's intention to make of the Southern end of its holdings its monopolistic feeder for the Southern, Southwestern and export trade.

Specifically Mr. Crawford declares that the million dollars worth of land acquired during the summer near Ensley will be immediately utilized for a water works system, including an immense storage lake and dam, by means of which the company will get all the water it needs at first hands and nominal expense. The water question, which has been a sore one for years, is thus settled.

Mr. Crawford also declares that another coal mine is to be opened and that a by-product coke plant is to be erected and that the Birmingham Southern, the company's railway line permeating its mines, factory and furnace fields, is to be extended. These immediate improvements involve an expenditure of \$5,000,000. This is merely in preparation for plant expansion at Ensley, where the company's steel end is situated. Ensley is five miles from present Birmingham and will soon be in the city proper, with the exception of the industrial plants, which are excluded.

The Tennessee company's ultimate plan appears to be this: With its own railroad line permeating all its territory and extended to the Warrior river near Tuscaloosa, it will carry its own wares in its own vessels down the Warrior to Mobile, and there transfer to ocean-going barges for Cuba, Porto Rico, Mexico, and the Central and South American countries, where its steel rail trade is already extensive, and where its coal and other products could also be transferred and find a market. Returning barges could bring Cuban ore, etc. In other words, the company is looking to the future and the immense export business that is bound to eventuate.

It is understood that the total value of the plans now being worked out by the Tennessee company involves \$20,000,000. Navigation on the Warrior river as far north as directly west of Birmingham will be feasible in two years' time under appropriations now being worked on. Eventually and upon the bringing of navigable water that far north the government will be asked to make appropriations for canalizing Valley creek, which runs from Bessemer to

the Warrior. Government engineers have pronounced this a feasible plan and say it will cost only \$4,500,000.

With the completion of this canal Birmingham freights will go to the gulf direct from mine and mill. Mr. Crawford's announcement has dissipated the last scintilla of doubt as to the United States Steel's Southern policy and shows that it is to be one of continued expansion.

COREY ON THE OUTLOOK.

"Next Year Will Witness a Record-Breaking Production."

In an interview secured with President W. E. Corey, of the United States Steel Corporation, during the week just ended, he is quoted as follows, in response to a question particularly as to the prospects of Southern business:

"We are right now in the midst of the greatest development in the history of the steel and iron business. The pig is being produced, the steel is being manufactured, and it is being sold and used.

"Substantially all of our plants are now running, and on practically full time, and there is no branch of the steel industry that is backward. The Tennessee Coal, Iron & Railroad Company has rail orders ahead to run for four or five months, and the Carnegie and Illinois companies can make no promises under 60 days. There is a good demand for all grades of finished steel.

"Next year will witness a record-breaking production of steel in every line. One of the greatest will be in railroad supplies, rails and cars. Next year will be the greatest in railroad buying and building ever known in the history of the country."

Dinner to Judge Gary.

The complimentary dinner which the leading independent steel manufacturers of the country are to give to Judge E. H. Gary, of the Steel Corporation, has mittee having the dinner in charge consists of E. A. S. Clarke, E. C. Felton, Willis L. King, J. G. Butler, Jr., James A. Campbell, Powell Stackhouse and John A. Topping. The dinner is announced as being altogether complimentary in its character, and no one in any way connected with the Steel Corporation has any hand in the plans.

Avonmore Plant Running.

The National Roll & Foundry Company, with offices in the Farmers Bank building, Pittsburgh, which began operations at its plant at Avonmore, Pa., September 1, reports that the entire plant is in operation and that the company is well supplied with orders. The company manufactures chilled sand and cast steel rolls for all purposes, designs

and constructs rolling and finishing mill machinery, and heavy castings from steel, grey and charcoal iron.

been fixed for Friday, October 15, at the Waldorf, New York City. The com-

Power for Steel Plants.

Among recent orders for direct current apparatus received by the Crocker-Wheeler Company, of Ampere, N. J., is one from the Southern Iron & Steel Company, of Roger, Ga., calling for two 250-K. W. engine type, 550-volt, direct current generators and 275-horsepower in 500-volt, D. C. motors. This is in addition to a recent order for 1,450 K. W. in engine type generators and 1,200 horsepower in slow speed motors from the same concern. The Republic Iron & Steel Company, Youngstown, O., placed an order for a 600-K. W., engine type, 250-volt, direct current generator, which will be added to a plant consisting of two 300-K. W. Crocker-Wheeler generators.

Demand for New Turbines.

Allis-Chalmers company has recently received orders for steam turbines aggregating a total of 25,225 K. W. These figures are only a fair indication of the demand for the improved type of horizontal steam turbine. The Diamond Rubber Company, of Akron, Ohio, has purchased a 1,250-K. W. low-pressure turbine. Sales of 500 K. W. turbines have been made to the Sheffield Car Company, Three Rivers, Mich., and two units for the Casparis Stone Company, for operation in their plants at Patterson's Creek, W. Va., and Havre de Grace, Md. The National Conduit & Cable Company, Hastings-on-Hudson, N. Y., bought a 750 K. W. turbine. The Taylor Iron & Steel Company, Highbridge, New Jersey also will put in operation a 300 K. W. turbine. Turbines of the same capacity have been sold to the Noblesville Heat, Light & Power Company, Noblesville, Indiana; Citizens Lighting Company, La Salle, Illinois, and Huntington Valley Light & Power Company, Jenkintown, Pa.

New Bridge Contracts.

The borough of Washington, Pa., has let contracts for a new steel and masonry bridge to C. A. Sims, of Philadelphia, for the grading and masonry work, and the Toledo-Massillon company for the superstructure.

Work on the sub-structure of the Market street bridge, at Wheeling, W. Va., has begun. The Nelson-Merydith Contracting company, of Chambersburg, Pa., has secured the contract. Plans for the steel superstructure are now being prepared by Herman Lamb, the city's consulting engineer.

ANNUAL MEETINGS.

Virginia Iron, Coal & Coke Co.

The Virginia Iron, Coal & Coke Company appears to have had a very unsatisfactory year, according to the figures contained in its annual report for the fiscal year ended June 30. Gross earnings were \$3,000,000, a decrease of \$928,561; and total income after expenses was only \$269,215, a decrease of \$307,492. This was insufficient to pay taxes and interest amounting to \$580,215 and the year closed with a deficit of \$311,730 compared with a surplus of \$117,945 the previous year, an increase on the wrong side of the ledger of \$429,675. The balance sheet shows only \$44,660 cash on hand, and bills payable amounting to \$1,117,247 as compared with only \$518,877 bills payable last year. There are no increases in the assets column to offset this except "materials on hand."

In his report to the stockholders Henry K. McCarg, the president of the company, says of the outlook:

"Once more I must say that at the present writing there is a distinctly better demand for iron, and prices have advanced from the lowest figures from \$2 to \$2.50 a ton. I trust it may be permanent, but was so wrong in my prognostication in my last report in reference to better demand that I hesitate about doing so in this, although conditions throughout the country would seem to warrant it."

Standard Underground Cable.

Joseph Wood, first vice president of the Pennsylvania Company was elected a director of the Standard Underground Cable Company, September 27, to fill the vacancy in the board caused by the death of Robert Pitcairn. Mr. Wood is the ranking official of the Pennsylvania in Pittsburgh.

The directors of the Standard Company declared the regular quarterly dividend of 3 per cent. It will be payable to stockholders on October 9.

Colonial Steel Company.

The annual meeting of the Colonial Steel Company was held September 27, in the offices of the corporation in Pittsburgh. Charles A. Painter, of Scully, Painter & Beech was elected a member of the board to fill the vacancy caused by the retirement of Charles M. Brown. The annual report showed that the Company enjoyed an excellent business during the fiscal year, although it had been influenced by the depression in progress during the greater part of that time. The amendments to the by-laws were approved. It is the purpose of the corporation to increase the board of nine members in the near future because

of the new interests that have recently become identified with its affairs. The Colonial has recently booked additional orders for its copper coated metal, and is preparing to turn it out on a larger scale.

NEW "J. & L. TROLLEY."

Construction Begins on Woodlawn Route Out of Aliquippa.

Contractors are at work excavating for the roadbed of the Woodlawn Electric Street Railway, to be constructed to connect Woodlawn, on the Pittsburgh & Lake Erie railroad, with Sheffield, three miles inland from the Ohio river. James A. Newell, of Newell, W. Va., is president of the company; Edward J. Allison, of Beaver, Pa., is treasurer, and G. A. Gilfillan, Pittsburgh, is consulting engineer. The officials of the company state that the road will be completed and in operation by January 1.

The line begins at the depot at Woodlawn, and follows a ravine through the property of the Jones & Laughlin Steel Company, in which the latter company has constructed a 15-foot concrete arch, to take care of surface water. The arch is 5,500 feet in length and, the bottom of the ravine has been filled to a depth of 20 feet. This fill will make room for the traction line, a railroad to connect the new Jones & Laughlin steel plant with its coal properties, and a 70-foot street, on which the abutting property will be reserved for business houses.

The electric line will cost about \$150,000 when completed. The plans call for 73-pound girder rails, to be used on the street, and 80-pound T rails for the private right-of-way. The power house will be located about midway on the line, it will be equipped with a 300-horsepower gas engine and a 175 K. W. generator, and a car barn will be built to accommodate four cars.

The line will pass through the residence tract of the Jones & Laughlin holdings, Sheffield Terrace, and several other residence districts where building on an extensive scale is contemplated.

Want Public Utilities Commission.

At the annual convention of the Central States Waterworks Association at Columbus, O., September 29, a resolution was adopted favoring a state public utility commission. This resolution was presented by C. W. Wiles, of Delaware, who spoke to the point as to the necessity of having such a body. He declared that if the cities in the State ever hoped to be benefited in the water, gas and electric lights and other public supplies, it was time that such a committee was being created. The resolution was adopted without any opposition.

INTERPRETING NEW TARIFF.

Rulings in New York Customs.

Interesting rulings were handed down during last week at the Port of New York, interpreting odd wrinkles in the new tariff law.

The Board of United States General Appraisers sustained a claim filed by Hensel, Bruckmann & Lorbacher and other importers regarding the classification of tubing made of an inner steel tube covered with braiding of woven iron wire. The collector exacted duty at 45 per cent as "manufactures of metal not specially provided for." According to the importers the merchandise is dutiable at only 35 per cent as "iron or steel tubes."

The question was whether tubing composed of both iron and steel is dutiable as tubing of iron or steel. This question, the board decides in the affirmative.

Failure on the part of Alfred Andresen & Company to mention in their protest two paragraphs of the tariff, resulted in the general appraisers rejecting the protest on the ground that it was defective.

The merchandise under consideration consisted of steel plates or sheets, intended to be used as wood scrapers by carpenters and finishers of hard wood. The customs authorities decided that the plates were dutiable at 45 per cent as articles of metal for which no provision exists in the law. Andresen & Company set up the contention in their protest filed with the board that the articles are dutiable at 35 per cent under paragraph 135, as "steel plates."

General Appraiser Fischer, however, in his decision for the board says that the claim in the protest that the articles are dutiable only at the rate provided in paragraph 135 is defective as the plates have been polished and tempered. The decisions holds that the importers should have incorporated in their protest paragraph 135. Mr. Fischer points out that the plates are properly dutiable at one cent per pound under paragraph 141, in addition to the primary rate claimed under paragraph 135.

As the claim for the additional duty accruing under paragraph 141 is not made, the board overrules the protest, although the collector's classification at 45 per cent is obviously incorrect.

In overruling protests filed by Joseph Spiero and others, the board declines to allow automobiles and their tires to be assessed at separate rates.

Collector Loeb regarded the automobiles and their tires as entreties, with duty at the rate of 45 per cent under the tariff provision for articles composed in chief value of metal. The importers alleged that the tires should be permitted to pay a tax of 30 per cent as "manufactures of rubber." General Ap-

praiser Fischer, in his decision for the board, holds that the collector's assessment as entreties was correct.

FIRES AT INDUSTRIAL PLANTS.

Ocean City, Md. — City waterworks building destroyed September 26. Gasoline and steam pumping plants crippled. Loss \$18,000.

Salem, W. Va. — McBride Lamp Chimney Company's plant destroyed September 22. Loss \$2,500; insurance \$1,500.

Indianapolis — McDougal Kitchen Furniture factory total loss September 23; loss \$150,000.

East St. Louis, Ill. — Stables and storehouse of J. C. Grant Chemical Works, baking powder, destroyed September 26; loss \$22,000.

Plans for Rebuilding.

Showell, Md. — C. C. Mumford keg stove factory fire, September 17, destroyed entire plant except engine and boiler, which can be repaired. No insurance on \$4,000 loss. As concern has other stove mills with surplus of machinery it will not be in market for new equipment other than belting, valves and small fittings.

Minneapolis, Minn. — Exchange Grain Company, whose working house, capacity 150,000 bushels, burned with 40,000 bushels of grain September 19, write the Industrial World that they expect to rebuild at once, replacing the old plant with an additional storage and fireproof structure.

Austin, Texas — The plant of the Tips Foundry, recently destroyed by fire at a loss of \$50,000, will be rebuilt.

Westinghouse Electric Dividend.

The resumption of dividends on Westinghouse Electric first preferred stock at the rate of 7 per cent per annum, was announced September 29. The declaration of 3½ per cent on account of deferred dividends, came at least three months earlier than expected, although the recent strength of the stock foreshadowed an early resumption. The dividends declared September 29 amount to 5¼ per cent and are therefore equivalent to a 7 per cent rate—to which the first preferred is entitled before anything is paid on the second preferred or assenting stock—for three-quarters of the current year. No dividend was paid for the last quarter of 1907 and none in 1908, so that 8¾ per cent remain to be paid on account of back dividends, amounting to \$349,887 on the \$3,998,700 outstanding first preferred stock.

American Methods Discussed by International Association

TWO papers read at the recent meeting of the International Association for Testing Materials, at Copenhagen, were of special interest in Pittsburgh district—one on "Special Steels," by Leon Guillet and the other, describing a series of experiments in the heat treatment of spring steel, by Lawford H. Fry. The final days of the session also were occupied largely in the hearing of the reports of the committees on the "International Specifications for Iron and Steel," and on uniform iron and steel nomenclature, in both of which the American members took an active part.

In his paper on "Special Steels," Mr. Guillet, at the outset, stated that if steels were classed according to their texture, it was found that pearlitic steels—i. e., those which displayed the same texture as ordinary carbon steels—were almost the only ones used for industrial purposes. Polyhedric steels, gamma iron steels, were losing every day in commercial importance, both on account of their high and low elastic limit. The latter were only used in particular cases, where their high resistance to oxidation, their capability of withstanding the temperatures of superheated steam, and their expansion coefficients were turned to account. The Hadfield steel found its application in cases where high resistance to shocks and to wear formed the requirements. Disregarding, however, tool steels and steel for balls and ball-bearings, there was now but one class of industrial steels—those showing a pearlitic texture.

These classified according to their importance, were: nickel steels and nickel-chrome steels; vanadium steels, with or without nickel and chromium; silicon steels, often called mangano-silicon steels; finally, and more rarely, the tungsten steels. In the attempt to raise the mechanical strength, metallurgists had been led to the manufacture of more and more complex steels, often containing three elements which were foreign to ordinary steel. The steels which gave interesting values when rough forged and subsequently treated suffered from a great disadvantage; if they possessed high elastic limits, they were very difficult to machine. The author illustrated his statements by giving the composition and the physical characteristics of several steel alloys he had experimented with, and summed up by confirming that pearlitic steels, and among them nickel-chrome steels, claimed a position of increasing importance. He was not an advocate of high carbon percentages; in practice, and apart from the silicon steels

which might contain up to 0.6 per cent carbon, the steels which answered their purpose best were those containing at most 0.4 per cent carbon; in many instances it was advantageous to keep below the latter figure. He referred briefly to steel containing copper, but this, he added, was too novel, and no data could be given as yet; they would be reserved for the following Congress. In England great progress had been made with the manufacture of high-speed tool steel, which gave six times the work formerly obtained with the ordinary tool steel.

This paper was not discussed.

Heat Treatment of Spring Steel.

The next contribution was one by Lawford H. Fry, on "The Heat Treatment of Spring Steel." This gave an account of a series of tests made at the Baldwin Locomotive Works in 1907, to determine the effect of certain heat treatments on the transverse elastic limit and on the modulus of elasticity of the steel commonly used in America for locomotive carrying-springs. The points investigated were: The effect of annealing, the comparative effect of quenching in water, and in oil, and the effect of reheating the steel to various temperatures after complete cooling in water and in oil. The steel was basic open-hearth spring steel, supplied by the Carnegie Steel Company, of the following composition: Carbon, 1.01 per cent; manganese, 0.38 per cent; phosphorus, 0.032 per cent; sulphur, 0.032 per cent; and silicon, 0.13 per cent.

The test-pieces were one inch in diameter and 14 inches long, of uniform circular cross-section. Ten test-specimens were cut from the same bar. The temperature at which these were quenched was not varied, experience having shown that there was a definite temperature for any given steel at which it should be quenched to obtain the best results. Steel could be hardened by heating it to, and quenching it at, any temperature equal to, or higher than, its critical point, but the higher the temperature at which it was quenched, the coarser became the grain, and the more brittle the steel. It was desirable, therefore, to quench the steel close to the critical point; in practice, however, it was found desirable to allow a certain margin above the theoretical hardening temperature. This margin above the critical point was affected by the sizes and shape of the work and the method of quenching. When determined, this proper quenching temperature should always be used, any vari-

ation in the final degree of hardness being produced by a change in the temperature at which the temper was drawn, or by the heat conductivity of the quenching bath.

By means of a magnet the critical point, or point of recalescence of the steel experimented upon, was found to be 1,360 degrees, Fahrenheit (740 degrees, Centigrade). Experience had shown that, for annealing, the steel should be heated to 40 degrees or 50 degrees above the critical temperatures, and that for hardening it should be brought to 50 degrees or 100 degrees above the critical temperature, the exact temperature being determined by the size of the work and the effectiveness of the cooling bath.

In the tests made by the author, the following temperatures were decided upon:

For annealing, 1,400 degrees, Fahrenheit, (760 degrees Centigrade).

For quenching in oil, 1,450 degrees, Fahrenheit, (790 degrees, Centigrade).

For quenching in water, 1,425 degrees, Fahrenheit, (775 degrees, Centigrade).

The heats to which the temper was drawn and the model of quenching were the only variable operations in the treatment. The test-pieces were heated in a lead bath, means being provided to secure control and uniformity of temperature. For annealing, the test-pieces were plunged in the lead, the bath being heated to 1,400 degrees, Fahrenheit (760 degrees, Centigrade) and kept at that heat for two hours; they were then allowed to cool naturally with the furnace. The time of cooling was 14 hours. The oil for hardening was at a temperature of 80 degrees, Fahrenheit, (27 degrees Centigrade); the water was pure running water at 60 degrees, Fahrenheit (16 degrees Centigrade). The test-pieces while being quenched were kept agitated until cooled to the temperature of the bath.

For drawing the temper up to 600 degrees, Fahrenheit, (315 degrees, Centigrade) the test-pieces were placed in an oil bath heated by gas; for drawing it above 600 degrees, Fahrenheit, they were placed in the lead bath. They were then allowed to cool naturally in the air.

For testing, the specimens were placed on supports 12 inches (305 millimetres) apart, and the loads were applied in the middle. The results were shown in a diagram and in a table.

The conclusions arrived at by the author were the following: The steel used, when thoroughly annealed as described, had an elastic limit of 78,500 pounds per square inch (55.2 kilogrammes per square millimetre), or about half the elastic limit obtained with it when given a

"spring temper," or equal to about one-third the elastic limit of the same steel when quenched in water and drawn to 750 degrees, Fahrenheit (400 degrees Centigrade). The highest elastic limit when quenched at 1,450 degrees, Fahrenheit in oil was 187,400 pounds per square inch (131.9 kilogrammes per square millimetre) and this was obtained when the temper was not drawn after quenching. The higher the temperature to which the temper was drawn the lower the elastic limit fell. Thus—

Drawing to 400 degrees, Fahrenheit, (205 degrees, Centigrade) gave 177,600 pounds per square inch (124.9 kilog. per square mm.)

Drawing to 500 degrees, Fahrenheit (260 degrees, Centigrade) gave 160,400 pounds per square inch (112.8 kilog. per square mm.)

Drawing to 560 degrees, Fahrenheit (292 degrees, Centigrade) gave 137,500 pounds per square inch (96.5 kilog. per square mm), elastic limit.

When the steel was quenched at 1,425 degrees, Fahrenheit, in water, and the temper not drawn after quenching, the steel was brittle and broke at 212,000 pounds (149 kilogrammes) modulus of rupture, the elastic limit being the same as the modulus of rupture, and the deflection of the breaking point being 0.71 inch (about 4.35 millimetres). "Modulus of rupture" expresses in pounds per square inch the apparent maximum fibre stress, tension, or compression of a member transversely loaded when it is just on the point of breaking, the stress being calculated by the common beam theory with its three important assumptions, which are known to be inaccurate above the elastic limit. Drawing the temper to 500 degrees, Fahrenheit, gave an elastic limit of 219,800 pounds (154.5 kilogrammes per square millimetre), still equal to the modulus of rupture—i. e., the ratio of stress to strain was constant up to the breaking point. The deflection at the breaking point was 0.175 inch (4.45 millimetres). Drawing the temper to 750 degrees, Fahrenheit, gave the highest elastic limit—viz., 240,800 pounds (169 kilogrammes per square millimetre), the modulus of rupture being higher—viz., 389,000 pounds per square inch (273.8 kilogrammes per square millimetre). The deflection at the breaking point was 0.744 inches (18.9 millimetres); when the temper was drawn to 900 degrees, Fahrenheit (482 degrees, Centigrade), the elastic limit fell slightly and the specimen did not break under a 1.1 inch (28 millimetres) deflection. When the temper was drawn to 1,050 degrees, Fahrenheit, (565 degrees, Centigrade), the elastic limit dropped to 180,700 pounds (127 kilogrammes per square millimetre), and the test-piece did not break under the same deflection of 1.1 inch.

The modulus of elasticity was shown to be practically constant and apparent-

ly independent of the heat treatment. It was, however, difficult accurately to determine; any error in the measurements was likely to make the value of the modulus smaller than it really should be. The blocks and base on which the specimens rested were compressed to a certain amount by the loads on the specimens, and if not perfectly fitted, the blocks took a certain set, which, together with the compression of the support, was measured with the true deflection of the specimen, and added to it. There was also probably a certain amount of denting by the load. The value obtained for the modulus of elasticity varied from 27,150,000 to 30,420,000.

Steel with 1 per cent carbon, the author concluded, when quenched in water from above its critical point, was usually too hard and too brittle to be used for the making of springs or tools. The tests, however, showed in what way the treatment followed modified the hardness and brittleness.

For International Specifications.

An interesting paper, entitled "Sparks as Indicators of the Different Kinds of Steel," by Max Bermann, Budapest, was then read in abstract, and illustrated by experiments with an electrically-driven emery wheel. The remainder of the day's session by Section A was devoted to the hearing of reports and the discussion of proposals, following a paper on "The Establishment of International Specifications for Iron and Steel." This was by Dr.-Ing. A. Rieppel, Nuremberg. It gave in tabular form a comparative summary of specifications for Germany, Great Britain, and the United States, based on specifications followed in each of these countries (for England, the British Standard Specifications), for structural steel, steel rails, and fish-plates.

The report of the sub-committee 1a, for drawing up the International Specifications, advised that the specifications of each country, recommended by the Deutscher Verband für die Materialprüfungen der Technik, the American Society for Testing Materials, and the British Standards Committee, be proposed for use for material manufactured in the respective countries for export orders. The sub-committee proposed to confer with the three above-named associations, and keep them informed of progress made or suggestions offered, or modifications proposed, with a view to a more complete unification of specifications. They proposed to confer with the manufacturers in order to induce them to roll trial orders under the conditions of the specifications of the other countries, in order to find out how far these conditions could be introduced for export orders. Further, they suggested that a standard drop-testing machine for rails

should be adopted in each country, as in the United States, to make the test comparative, and that a report should be put before the next Congress.

W. R. Webster, Philadelphia, a member of the sub-committee, who opened the discussion, regretted that Dr. Rieppel, the chairman, was not present to hand in his report personally, as he had taken an active part in the work. It was unnecessary to read the specifications; the report which contained them showed how the committee had dealt with the matter, and they would be glad to receive the suggestion of members, so that the work could be continued until the next Congress.

Geheimrat A. Martens, Berlin, proposed a resolution to the following effect: "The fifth Congress, after taking note of the various points contained in the report in question, accepts in a general way the bases put forward, agrees to the proposals of the sub-committee 1a, and decides to ask the sub-committee in question to continue their important work, keeping in contact with the national institutions; a further report to be handed in by them at the next Congress."

Dr. N. Bebelubsky gave general data on the specifications followed in Russia. Modifications in their specifications would form a very serious matter, he said:

Leslie S. Robertson, secretary of the Engineering Standards Committee, assured Dr. Bebelubsky that the sub-committee were most desirous of co-operating with every country. The specifications should have more or less of a national character in their respective countries, but should not be mere government departmental specifications. They should not be drawn up by engineers alone; it was absolutely necessary that manufacturers should be called upon to collaborate with the engineers and the representatives of the government departments.

Dr. N. Bebelubsky replied that in Russia manufacturers co-operated with engineers in the matter; a Russian government department never arrived at a decision without first consulting the works.

Mr. Cartault, Paris, said that there appeared to be in the question under consideration two different points. One was to form a kind of national vocabulary, so as to be able to apply to another country a corresponding equivalent; this was very desirable. In the second place, it looked as though it were desired to draw up general specifications applicable to all purchasing countries, and this seemed a very difficult point. Even in one and the same country conditions varied, and the rails to be laid in the cold, northern provinces had to be different from those for the south,

warm provinces. Mr. Webster said he fully appreciated the difficulties; what they wanted was to have the views of the members as to what they considered were the representative specifications in their respective countries. The sub-committee felt that it would be easy to harmonize the main conditions. As would be seen by the report, the variations were not so very important. The international specifications were intended primarily for export orders; it was not desired to dictate to other countries.

The resolution proposed by Geheimrat A. Martens, carried unanimously.

Uniform Nomenclature of Iron and Steel.

The report sent in by Professor Henry M. Howe, New York, and Professor Albert Sauveur, Cambridge, Mass., chairman and secretary respectively of Committee 24, "On the Uniform Nomenclature of Iron and Steel," has been printed in the Proceedings of the Iron and Steel Institute.

Regarding the definitions of the microscopical constituents of iron and steel, the authors stated that these definitions were based on the known and usually indisputable properties of the several constituents, and not on their nature or constitution, which were still in dispute, and likely to remain so for some time, because of the complexity of their genesis and the imperfection and obscurity of our evidence.

Professor Howe suggested the word "metaral," the analogue of the mineral, as equivalent of the bulky term "microscopical constituent." It was more accurate than "microscopical constituent," because these substances were often far from being microscopical, as, for instance, the graphite of pig iron and the primary cementite of ferro-manganese. Moreover, "constituent" seemed vague. Occurred gas and dissolved iron oxide were surely constituents, but hardly "metarals," just as the carbonic acid dissolved in mineral water, though a constituent, was not itself a distinct mineral when so dissolved. Dealing with other appellation, the authors stated that osmondite and troostite—stages intermediate between troostite and sorbite—had been described by some writers, but the committee believed that these terms, which at most represented constituents of only hypothetical existence, were neither known nor used enough to justify giving them a place in the list of definitions contained in the report.

M. Le Chatelier, who opened the discussion, stated that each country had, of course, its own language, and no congress could fix a name to be generally adopted for any product. The report was a useful complement to a technical dictionary. In order to show the difficulty of agreeing upon a name, he stated that what Mr. Stead called "sor-

bite," Mr. Osmond called "troostite," and Professor Heyn called "osmondite"; in some cases, therefore, it was almost impossible to see clear in these matters owing to the confusion of names. The authors had proposed a new word, "metaral"; but if this new word were adopted, it would have to be applied in each instance with accuracy, and to metallic constituents, and not to all substances generally classified as minerals. Granite was not strictly considered as a mineral, and pearlite could not be called a metaral. The matter should be looked into afresh.

Geheimrat A. Martens agreed with Mr. LeChatelier, and stated that the national societies should be consulted before an agreement was arrived at concerning new names of constituents.

F. W. Harbord said his name appeared on the list of members of this committee (Committee 24), but as he had only been appointed last year, he would have to reconsider several points, among others the definition given for blister steel.

Dr. W. Misangyi, Budapest, asked that the definitions in Hungarian be added to the tabular list of names of metallurgical products.

Mr. Grenier stated that there were two parts in the report: the commercial nomenclature, which had been dealt with exhaustively, and the scientific one, which there was then no time to discuss. Many years ago, he (the speaker) had given the following brief descriptions: Steel was the cast material which was malleable; iron was the malleable material which was not cast; and cast iron was the non-malleable cast material. He added that the age called the "Iron Age" was improperly so called, for the tools which succeeded to those used in the stone age were not of iron, but of steel.

The chairman decided that as no agreement had been reached in the matters dealt with in the report, this should be referred again to the next Congress.

NEW IDEA IN CYLINDRICAL GASOLINE RAILWAY CAR.

Some remarkable anti-test claims are made for a new gasoline railway car, which is the invention of a Wisconsin railroad man, according to a Cincinnati letter to the Columbus "Car Review." The inventor's friends are arranging for a practical test at Cincinnati, in the near future. It has been inspected by a number of the foremost practical operating officials of the country.

Estimates of conservative friends of the inventor are that this car will be able to make the 116 mile trip from Cincinnati to Columbus in one hour and forty minutes, including the usual stops, instead of three hours and forty minutes, the time now made by the fastest trains

on the Pennsylvania and the Baltimore & Ohio Southwestern. Instead of a one-way fare of \$2.40 the new gasoline car system would admit of a rate of perhaps \$2.50 for the round trip, with a wider margin of profit than is now earned by the steam operated trains.

Persons interested in the project are as yet disinclined to give out any authoritative information concerning it, claiming that the time has not yet come for publicity, but it has been learned that the initial car is being secretly built at one of the largest car plants in Ohio for a company of California capitalists. The work is being done from a complete model and drawings and specifications upon which the inventor has been working for more than 10 years and which have been completed within the past year. A practical engineer of experience, who has been allowed to inspect the model and drawings and thoroughly analyze the mechanical conception and theory of operation and construction, has this to say:

"The most conspicuous and original feature of the car is the absence of trucks, the coach being suspended from the roof on three sets of springs, which places the center of gravity near the ground and overcomes the seeming top-heaviness of cars mounted on trucks. Large wheels at either end give the car an easy swinging motion, the three sets of springs compensating for the different movements in rounding curves and traveling rough tracks.

"The car is built of plate steel, cylindrical in form and pointed at both ends, which feature reduces the atmospheric pressure in front and the suction at the rear and beneath. There are no rods or projections of any character below the car, precluding the possibility of derailment or similar accident, and the fact that the body of the car is cylindrical insures its sliding along the tracks should an axle break, thus adding another safeguard. The power is supplied by two gasoline engines, the tank holding sufficient fuel to operate over a run of 3,000 miles, and the power is applied direct from the engines to the axles. There are no steps to mount in boarding or alighting, no trolley wires, poles or power stations are required, reducing the cost of equipment and maintenance and the extraordinary speed that will be obtained will reduce rolling stock requirements and the number of operating employees."

Sell Zinc Plant.

E. G. Pearlman, of Philadelphia, last week purchased the Clarksburg (W. Va.) Zinc Company's plant, employing 70 men, for \$42,000. The proceeds of the sales go to Postmaster S. C. Denham, Virgil I. Highland, and others.

Feed Water Heater Company Under New Management

ANNOUNCEMENTS have been sent out informing the public of the re-organization of the Pittsburgh Feed Water Heater Company, with an increased capitalization, and reviewing the work accomplished since the organization of the original company in 1900.

The reorganization of the company, has resulted in the choice of the following officers and directors:

E. D. Graff, president; J. E. Schlieper, vice president; Joseph F. Guffey, treasurer; C. E. Greenfield, secretary; S. S. Stewart, director.

The Pittsburgh Feed Water Heater Company is one of the oldest feed water heater concerns in the country, and the only feed water heater manufacturer in the Pittsburgh district. At its original organization, in 1900, the company was held principally by J. E. Schlieper and James Bonnair & Company, limited. In 1907, Bonnair & Company assigned, and, although the failure did not directly affect the water heater corporation, that concern was somewhat embarrassed for several months. On the reorganization just announced the Bonnair stock was absorbed by the new interests.

In the last 12 years the Pittsburgh Feed Water Heater Company has sold in the neighborhood of 750,000 horsepower. They expect to reach the million horsepower mark before very long. An aggressive policy has been outlined for the future conduct of the business.

At the time of the issue of the first patents on the Pittsburgh Feed Water Heater, the market was chiefly for a closed or tubular type heater, for which there is still a large demand where open heaters cannot be conveniently used. The arguments used for the open type heater, properly constructed urge its desirability from an economical as well as a mechanical standpoint, principally on the claim that the steam from an open type heater comes in direct contact with the water to be heated and the full efficiency of the steam is thereby assured, also that all condensation produced in the heater is saved and carried off with the feed water into the boilers, this condensed steam having the additional feature over the feed water of being absolutely pure.

The Pittsburgh Feed Water Heater Company's open type heater is claimed to be so constructed that it can be examined and overhauled thoroughly at a moment's notice, with the least possible loss of time, which in a large steam plant means money. Its system of pans is such that they never need to be removed from the heater for cleaning purposes, but can be reached from the out-

side through doors placed for this purpose in the shell. This type of heater is controlled by a perfected automatic device insuring constant efficiency with practically no attention.

The first open type heater placed on the market by the company was of boiler plate construction containing pans supported by a central shaft and also attached by means of brackets riveted to the shell as shown in cut No. 1. This method of construction was later improved by substituting high grade cast iron shells, with a system of pans so constructed upon a vertical supporting shaft that each pan is supported independently and revolvable around the central shaft with no attachment what-

over to the shell, as shown in Figure 2. The advantages of the later construction can easily be summed up as follows:

Cylinders—In a great many localities, the condition of the water is such that boiler plate shells are soon corroded and destroyed, especially in the seams, by acid contained in the water, whereas, cast iron has been demonstrated to be impervious to the chemical condition of the water, and for this reason, of longer life. The fact that cast iron shells will not withstand the pressure that boiler plate shells can stand is not an essential feature in the case of an open heater, there being no excessive pressure to contend with as in the case of closed heaters.

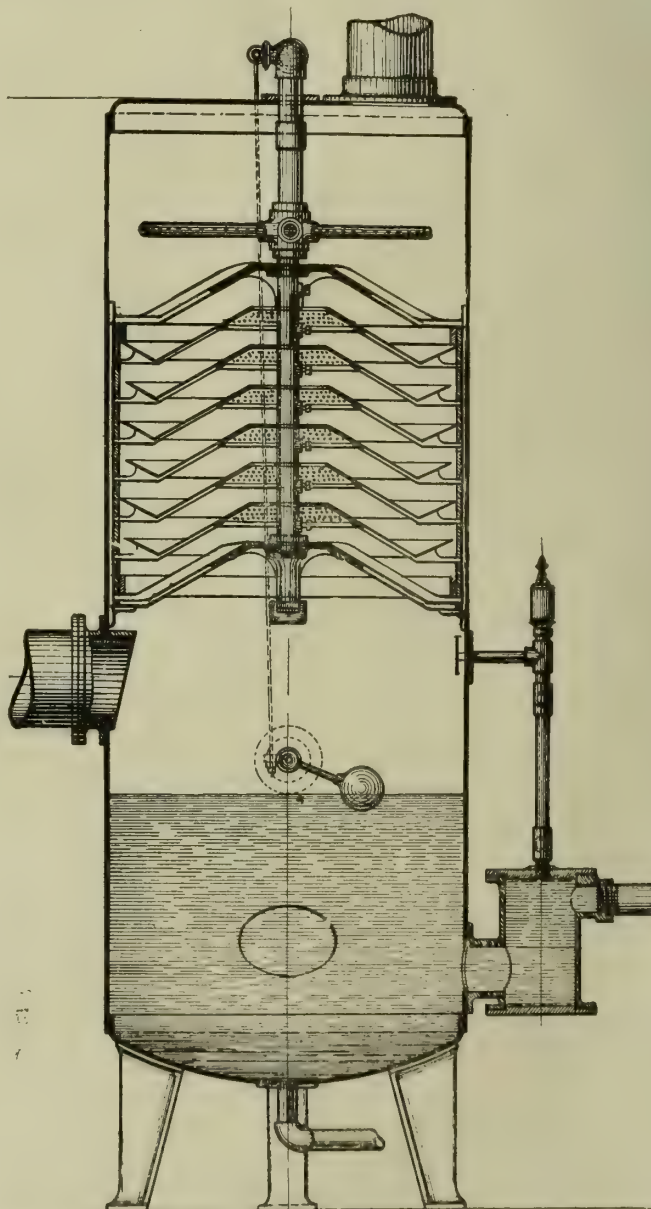


Figure 1.

Distributing Pans—The efficiency of a heater is largely based upon the method by which feed water is brought into contact with the steam furnished for heating, and in the Pittsburgh Feed Water Heater, this efficiency is claimed by the company to be attained in the highest degree. Cut No. 2 shows the method of distribution.

The cold water is admitted to the heater through a balanced valve on the top of the shell. It then passes through the inlet pipe in the center of the upper head to a manifold spraying device located immediately above the pans. In passing through this spraying device the water is distributed evenly in a very fine spray to the upper pan. From the inner edge of the upper pan it falls vertically to the pan below, and from this pan on the outer edge to the one beneath, and so on through the whole series. The pans being arranged alternately, large and small in the outside diameter, the water is given a zigzag travel from the one to the other, main-

taining two fine volumes of water, one each on the inner and outside diameters of the pans.

The exhaust steam enters immediately below the distributing pans into a large steam space, passing slowly upward coming into contact with the fine volumes of falling water. This steam passes up the outside and inside of the pans equally all around, and at the same time meets the small particles of water at the spraying device, passing from thence into the atmosphere through the outlet connection on top of the heater.

It will be noticed that the flow of water is confined to the central part of the heater, and does not come in contact with the outer shell. The exhaust steam being between the water and the shell practically forms a natural steam jacket, allowing no chance for decrease of temperature of the water from outside exposure.

The feed water meeting the exhaust steam, readily robs it of its heat units until the highest possible temperature at-

tainable (212 degrees, Fahrenheit) is reached, while at the same time, all the carbonates of lime and magnesia are precipitated: The water after leaving the pans falls through the steam space, to the water reservoir and sedimentation chamber in the lower part of the shell.

A further purification of the water is provided for in the water reservoir by allowing the mud and heavier impurities to settle in the bottom of the shell where they can be blown off while the oils and floating impurities on top of the water are taken care of by a patented horse shoe shaped overflow and skimmer placed on the water level.

This skimmer is suspended in such a way, that it gathers the impurities from the water in the heater at the high water level, and carries them through its trough into the overflow where they are discharged.

The oil separator consists of a cast iron cylinder connected to the main shell near the bottom with a larger inlet than the opening to the pump suction. This separator or side chamber is of such a size that it will keep the water in a static condition so that the pump is only drawing the water from it instead of drawing on the main reservoir of the heater, thus guaranteeing only pure water to be delivered to the boilers. It is also connected to the steam space of the heater by means of a vent pipe located in the top of the chamber for carrying off the vapor existing in the body of the water, and also to mechanically cut off the suction of the pump.

Heater Purifier and Receiver Combined With Auxiliary Oil Separator.

The heater as shown in Cut No. 2 appears with additional features in cut No. 3, viz., with a receiver and also an auxiliary oil separator attached. This combination is designed for installations where exhaust steam is required, after it has been utilized in heating feed water for the boilers, either in a heating system or drying system, or in fact wherever the use of surplus exhaust steam can be applied. The principle of this construction is to offset atmospheric influence; in other words, the exhaust steam is admitted from the engine to the heater thence into a heating system or equivalent, and then returned as waste into the heater, thus using water and steam as well over and over again. The receiving system is automatically constructed, working simply by gravity of the overflowing water from the main part of the heater into the receiving chamber, agitating a copper float, which governs the balance valve that regulates the discharge of the waste water.

The auxiliary oil separator, as in the case of the receiver, is designed for installations where exhaust steam is re-

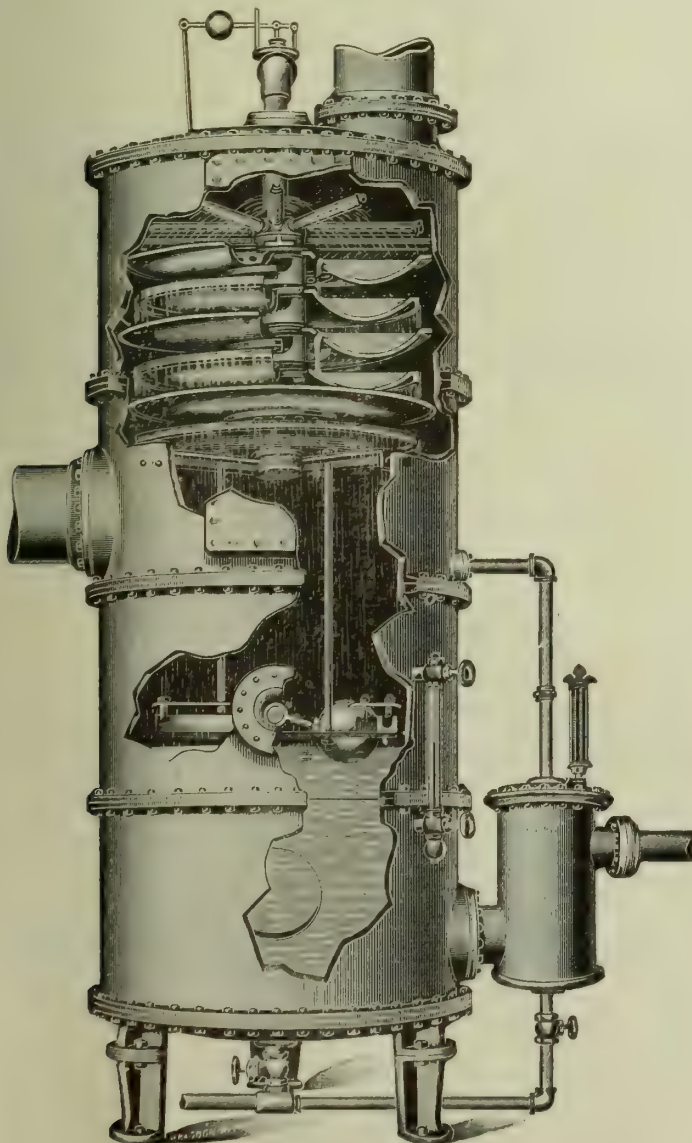


Figure 2.

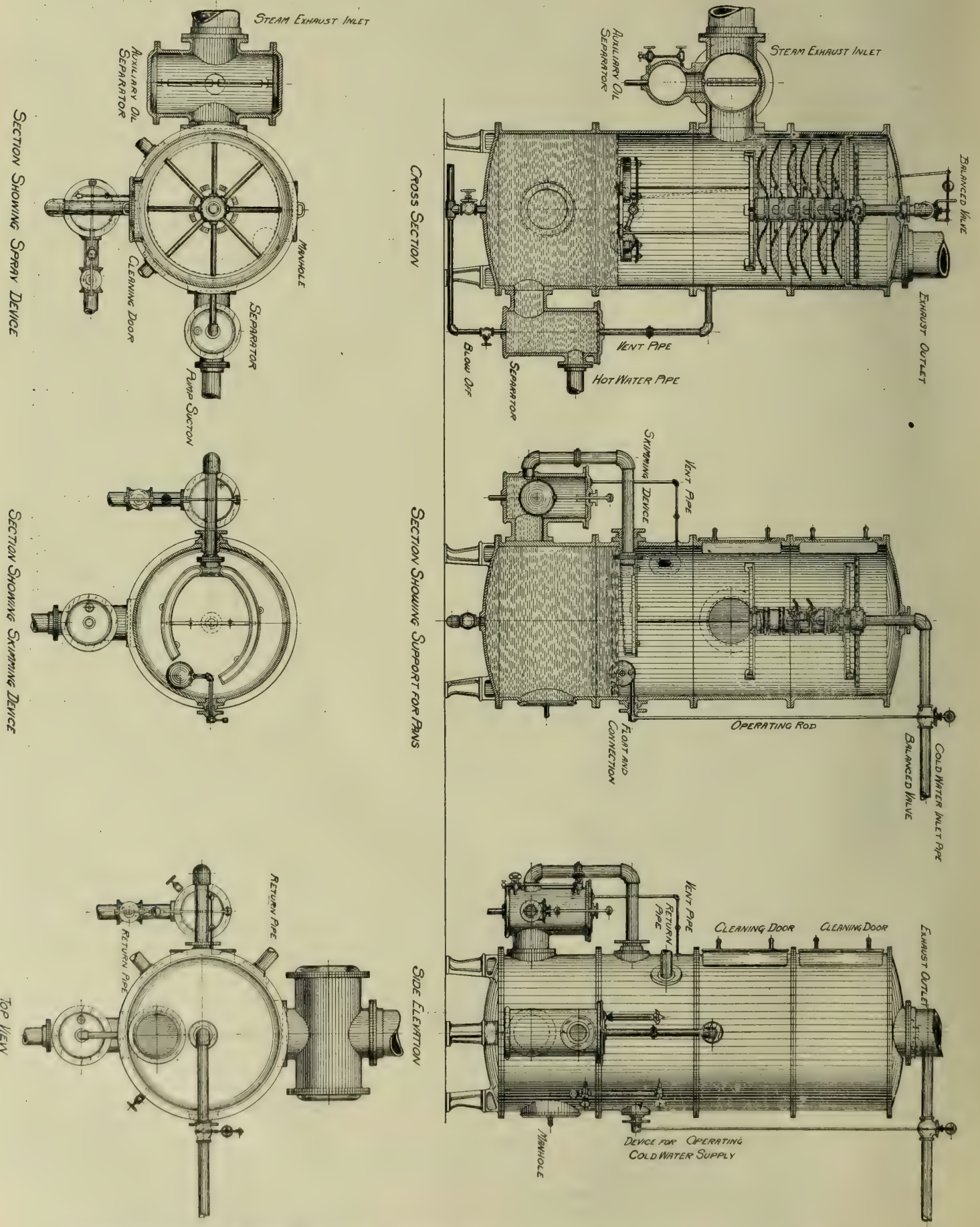


Figure 3.—Feed Water Heater Purifier and Receiver, Showing Auxiliary Oil Separator on Exhaust Inlet.

quired, after it has been utilized in heating feed water for the boilers, either in a heating system or drying system or in fact wherever the use of surplus exhaust steam can be applied. Its application on the heater practically guarantees the entire removal of all oil contained in the exhaust steam admitted to the heater for the above purposes.

This same company manufactures a horizontal open type heater as well as the vertical type above described; also a closed or tubular heater, either horizontal or vertical, to meet all conditions and requirements, viz., hot water heating or boiler feed, where considerable pressure has to be contended with as in the case of condensing plants in ice plants, etc.

PERSONAL.

Thomas Flannigan, of Marquette, Mich., who has been engaged in mining work on the Mesaba range the past six or seven years, has been promoted to the superintendency of five of the Republic Iron & Steel Company's mines, including the Schley, Petit, Maska, Monica and Wells, all of which are located in and near Gilbert and McKinley. C. T. Fairbanks, recently promoted to the general management of the company's entire mining department, spent last week on the Marquette range. The Republic's iron mining interests are now more extensive than ever before, and many new properties will be opened up during the next year or two. Captain Ross Webb, who has had charge of mines on the Mesaba for the company, succeeds Mr. Fairbairn as manager of the iron properties.

v

W. L. Loveland, of the Allis-Chalmers Company, with which he has been associated for 19 years for part of that time as manager of their mining machinery department, has resigned to become general manager of the Mine & Smelter Supply Company, No. 42 Broadway, New York, on October 1. His successor is H. C. Holthoff, manager of the mining machinery branch of the Allis-Chalmers at Mexico City.

v

The Monongahela Tube Company, Standard Bridge Tool Company and McCoy & Brandt, dealers in electrical appliances, are Pittsburgh firms which were shaken up by the explosion in the Ferguson building on September 27. As the offices of the companies mentioned were but slightly damaged no immediate change in location will be made.

v

George E. Lees, formerly of the Lees-Williams Company, has become identified with the American Vanadium Company, Pittsburgh. Mr. Lees has taken

charge of the advertising department of the latter company.

OBITUARY.

WILLIAM D. HARTUPEE.

William D. Hartupée, vice president of the Pittsburgh Plate Glass Company, died September 24, at his rooms at the Hotel Schenley, Pittsburgh. He was 55 years old.

Mr. Hartupée, besides his glass connection, was president of the Pittsburgh Valve & Fittings Company, and was connected with the Columbia Chemical Company, and the Owassa Sugar Company. Mr. Hartupée was born in Pittsburgh, his father, Andrew Hartupée, now dead, having had a machine shop at Third avenue and Ferry street, in which he made engines for gun boats during the Civil War and later made engines for the Brilliant pumping station. Mr. Hartupée practiced engineering in Pittsburgh, and engaged in laying gas and oil lines until 1890, when he became connected with the Charleroi Plate Glass Company.

MILO G. KELLOGG.

Milo G. Kellogg, founder and president of the Kellogg Switchboard & Supply Company, Chicago, died at his home in Chicago, September 26, aged 60 years. He was born in Rodman, N. Y., and immediately after his graduation from the University of Rochester in 1870 located in Chicago, where he engaged in the manufacture of electrical appliances and apparatus. He was especially interested in the manufacture of telephones, and invented several improvements upon these and other electrical devices. Early in his career he became connected with the Western Electric Company, with which he occupied an important position at the time he founded his own corporation. He was a member of the Union League, Chicago Athletic and Kenwood clubs. He leaves a widow, one daughter and two sons.

BENJAMIN CATLEY.

One of the most widely-known men in Western Pennsylvania, Benjamin Catley, aged 74, known to thousands as "Ben" Catley, died September 30, at his home in West View. Mr. Catley had been manager of the Zug Iron & Steel Company mill, Pittsburgh, for more than two years. Previously he was in the sales department for 12 years.

Mr. Catley had been a local preacher in the Methodist church. He was born in Garforth, England, and early in life came to America, locating in Pittsburgh.

He was first a blacksmith's helper, later traveling salesman for the Graff-Bennett Company, and was with the

Carbon Steel Company as salesman for 25 years previous to going with the Zug company.

JAMES HENRY COVODE.

Word has been received in Pittsburgh of the death at La Paz, Bolivia, of James Henry Covode, aged 45, the noted civil and mining engineer. He died September 9. Mr. Covode for many years was connected with the Pennsylvania Railroad in the capacity of civil engineer.

His father was John Covode, who for 25 years represented a Pennsylvania district in Congress. The body will likely be brought to Pittsburgh for interment.

ROLLA B. MOODIE.

Rolla B. Moodie, a prominent Dayton, O., business man, until recently president of the Master Plumbers' Association of America, died suddenly at his home at that city, September 28, from heart trouble. He was a member of the plumbing firm of Ware & Moodie, and was 56 years of age. He is survived by his wife and daughter.

SYLVANUS BOURNE.

Sylvanus Bourne, 62 years old, president and treasurer of the Bourne & Knowles Manufacturing Company, Cleveland, makers of iron specialties, committed suicide in his office at the plant, September 30, by shooting himself in the head. It is thought that worry over the illness of a son prompted the act.

PATRICK HANLON.

Patrick Hanlon, who for many years had been prominent in the iron and lumber business in Northern New York, died at his home in Clayburg, N. Y., September 28.

REVIEWS OF TRADE CATALOGS.

Numerous instances of welding under unusual conditions by the Thermit process are illustrated and described in a booklet issued by the Goldschmidt Thermit Company, New York, in which appears articles on welding high pressure pipe lines, welding on the Panama canal, recent marine repairs, railroad shop work and track welding.

* * *

The Rockwell Furnace Company, New York, has issued an illustrated catalog describing the line of heating furnaces manufactured by the company. The line covers completely furnaces ranging in size from the small bench brazing forge to the continuous heating furnace for billets, plates and other mill work. The furnaces are built to suit all conditions and for all purposes including forging, welding and annealing, and for all fuels.

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THE SHEET AND TIN PLATE ADVANCE.

SHEETS and tin plates have lagged behind most finished steel products in the matter of advancing prices, the first definite advance since the price break of last spring occurring last week, and being effective September 28. Sheets, however, had been shaded and recovered to the nominal market, so that strictly speaking there had already been an advance in sheets, but in tin plate the market remained firm at the price as first reduced March 10, so that from March 10 to September 28 tin plates stayed at one price.

Bars, plates, shapes and wire products have all scored substantial advances from the low points made shortly after the February break.

The advance in sheets and tin plates has been positively dictated by the sharp advances in raw materials, sheet bars advancing steadily and rapidly in the past two or three weeks, while spelter has advanced a cent a pound from the lowest price of last May.

The advance in sheet bars has averaged about \$5 a gross ton, corresponding to a little over \$5 a net ton in sheets and tin plates. At the low point there was no definitely established price for sheet bars, prices being irregular and some mills succeeding in making better averages than others in their purchases for prompt and future delivery.

Before the price break sheet bars were \$27.50, delivered Pittsburgh and a number of other points. On the regular reduction in March, both billets and sheet

bars were dropped \$2 a ton, but irregularities soon appeared. The lowest sales which have come to light were at \$23, delivered, no large tonnage being secured at this price, but there were many sales, for forward delivery, in the neighborhood of \$24, delivered.

Following a slow recovery the sheet bar market has advanced rapidly in the past three weeks. Less than a month ago a sale of open-hearth sheet bars was made at \$26.50, delivered, to a mill taking a 50-cent rate from Pittsburgh. In the past week the minimum of the market has been quoted at \$27, f. o. b. Pittsburgh, for Bessemer bars, but sales have been made at \$27.50, Pittsburgh, or \$28, delivered, for Bessemer bars, and at \$28, f. o. b. mill, for open-hearth bars, both for fourth quarter delivery. Thus we may compare, approximately, delivered prices of \$23 to \$24 at the low point and \$28 to \$29 at the present time, an advance of approximately \$5 a ton.

As compared with this advance in sheet bars the advance in tin plate is only 10 cents a box, or \$2 a net ton.

The advance in sheets is more complicated. On the original break prices dropped to 2.20c for black sheets and 3.25c for galvanized sheets, this being the openly quoted market on carload lots. Shading at once appeared from these prices, reaching about \$2 a ton on black and \$3 a ton on galvanized, the minimum of the market, done on any considerable tonnage, being about 2.10c on black and 3.10c on galvanized. The advance announced last week by the leading intertest was 10 cents per 100 pounds on 2.20c and 3.25c, making its openly quoted prices 2.30c on black and 3.35 on galvanized. Assuming that these prices will hold the extreme advances from the low point are \$4 a net ton on black sheets and \$5 a net ton on galvanized sheets. The advance in sheet bars more than covers these advances.

In the case of galvanized sheets, spelter is also to be considered, and it has also scored a large advance. About the lowest price done in May was five cents, delivered Pittsburgh, although earlier in the year spelter sold at much lower prices. The present market is all of six cents, so that since May there has been an advance of a cent a pound.

While prices on galvanized sheets generally move uniformly over the different gauges, preserving the spreads between gauges, the change in cost of production due to a change in the cost of spelter varies with each gauge, the influence being heaviest on the light gauges and lightest on the heavy gauges, since galvanized sheets are sold per pound, while the thickness of coating is practically uniform for the different gauges. The average weight of coating is about 1.4 ounces per square foot, the consump-

tion of spelter being larger, but the dross brings something like four-fifths the cost of virgin spelter, and the market price of dross fluctuates with the price of spelter, so that the apparent loss in coating need not be considered in a rough estimate.

Galvanized sheets of full 28 gauge weigh 10 ounces per square foot for the substance and 1.4 ounces for the coating, so that a square foot involves selling 11.4 ounces of material, 1.4 ounces of which is coating. The proportion is practically two ounces of spelter in one pound of galvanized sheet, 28 gauge, or one-eighth, so that an advance of one cent in spelter means an increased cost of spelter in one pound of galvanized sheets, 28 gauge, of one-eighth cent, or 12½ cents per 100 pounds. Thus the advance of one cent per pound in spelter since May covers one-half the advance of 25 cents a hundred which has occurred in galvanized sheets, although, as we have seen, there has been an advance in sheet bars sufficient to cover the whole advance, so that it may be argued that the advance in galvanized sheets covers only two-thirds the advance in raw materials.

A comparison of prices over long periods shows also that the newly established spread between sheet bars and sheets is low. The average price of black sheets over the two years 1907-8 was about 2.50c; the average price of sheet bars in the same period was about \$29, Pittsburgh. Making a rough comparison with these prices, sheet bars are not more than \$2 lower, while sheets are \$4 lower.

THE REVIVAL IN RAILS.

EVIDENCES have been multiplying that 1910 will be a good rail year.

Although there has been no question about the ability of the mills to make deliveries, railroads have been placing orders very freely during the past month for next year, and a comfortable foundation has already been laid for a large tonnage.

It goes without saying that rails take tonnage out of a steel situation more easily than any other finished product. It is no great matter for a railroad to buy 25,000 or 50,000 tons of rails, and systems have sometimes allotted at one time as much as 150,000 or 200,000 tons. A very large skyscraper does not involve 15,000 tons of structural steel, yet 15,000 tons of 100-pound rails will lay only about 100 miles of track, and there are more than 300,000 miles of track in the country. Again, 15,000 tons of tin plate is over two and a half square miles, which is quite a considerable quantity of tin plate.

A heavy rail demand has frequently

furnished the chief foundation for prosperity in the iron and steel trade. The case of 1899 is practically pertinent. There had been a pool in rails most of the time, but in 1898 there was rather an open market and towards the close of the year the mills got into particularly active competition, while the railroads were quite disposed to buy. Cause and effect were more or less interactive; the disposition of the railroads to buy incited the mills to make special efforts to secure the orders, while the prices named incited the railroads to buy more freely. The result was the booking of a very large tonnage of rail business for 1899. Indeed, the 1899 production of rails was just double that of 1896, three years earlier. A large tonnage of steel was taken out of the situation, although sold at low prices, and with so much steel removed, and a growing demand for steel in all other forms, the capacity of producers was taxed to the utmost, and prices soared sky high.

In 1905 and 1906 the rail demand was again the backbone of the steel trade, but it is noteworthy that while 1907 showed a gain over 1906 in the total production of pig iron and of rolled iron and steel, the rail production showed a decrease of 10 per cent from 1906. Rails were about the first line, therefore, to show a decline in tonnage, while they are about the last to come up to full demand after the depression.

The volume of rail production has undergone some interesting swings. A few decades ago, when the railroads were being built, nearly all the rails made went into new track. In 1887 a record was made for the building of new road, more than 12,000 miles being added to railroad mileage in that year, a record which has not since been touched or even closely approached. The production of rails in that year exceeded two million tons, and there were imports besides. Then new railroad building fell off, and rail production correspondingly declined. In most of the years of the 1893-8 depression the annual output was but slightly in excess of a million tons, probably somewhat equally divided between new track and replacements. Rails were not wearing out very rapidly then, as tonnage was light.

On account of the permanent decrease in new railroad building, the 1887 production record was not easily broken. It remained for train loads and speeds to become so much heavier, as to require replacement of heavier rails for the light rails at first laid, and then, 12 years later, in 1899, the 1887 production record was broken. Since 1899 the increase in rail production has been rapid, as there has been wholesale relaying. Twenty years ago the great bulk of the rails used were for new track; in the past

few years the bulk has been for relaying, not simply relaying because rails are worn out, but because they are too light for the heavier service required.

The production of all kinds of rails in the past four years has been as follows, in gross tons:

1905	3,375,929
1906	3,977,877
1907	3,633,654
1908	1,921,611

OUR RETROSPECT.

IT is no small thing for the memory of a steel works manager to survive his death by 20 years, yet how few there are to-day who really know anything of the history of steel manufacture in the United States who do not know of Capt. William R. Jones? Our issue of October 4, 18889, records his death. We make extracts both from the news columns and from the editorial tribute:

"On September 26 a frightful accident occurred at the Edgar Thomson Steel Works, which resulted in the death of Capt. William R. Jones, general manager of the works, and two of the workmen, besides injuring quite a number of others. Furnace C became clogged and while the men were endeavoring to remove the obstruction a burst occurred, throwing out hot coke and cinder over those around; Capt. Jones was not thought to be badly burned, but he died suddenly last Saturday night at the Homeopathic Hospital. Capt. Jones' funeral, on Wednesday last, was attended by about 5,000 people."

Editorially, our issue continues:

"To not a few the announcement of the death of Capt. William R. Jones brings with it a sense of personal loss. Not since the death of Holley has one dropped out from the ranks of metallurgy whose departure caused so many of his associates to feel that they have lost a personal friend, while the great army of workmen that cheerfully owned him as their Captain, knew him and now mourn him as their 'friend faithful and true.' Arms that have grown strong and cunning under his direction, and through his leadership, have borne him to his last resting place, and joined with them in this sad duty were the Captains of other industrial thousands who hesitated not to own that in their chosen profession Bill Jones was the leader of them all.

"He was a 'Captain of Industry,' unsurpassed as an organizer, marvelous in his knowledge of detail, fertile in expedients and invention; always planning new victories and winning them. His success is written in the monster establishment at Bessemer, which will re-

main a monument to his energy, his skill, his achievements.

"The position he filled was one that demanded a higher order of executive ability than that required of the President of the United States or any of his Cabinet, and this fact was recognized by a salary equal to that of the President.

"And yet after all we doubt not that the fact that would give him the most sincere gratification is the knowledge that he preserved in such a high degree the respect, the love of the thousands that were under him, and he deserved all the love they bear him and all the respect they pay his memory. No one more honestly and with more singleness of purpose strove in every way to help and benefit those under him than Capt. Jones."

This issue of 20 years ago illustrates how easy it is to underestimate the possibilities of future growth in an industry, although appearing to take a most optimistic view. We find an article, "Structural Iron versus Wood," from which we make a few running excerpts: "Without question the timber trade is beginning to seriously feel the loss of demand resulting from the use of iron in the construction of buildings. The growth of the demand for structural iron has been rapid within the past three years. * * * The present flourishing condition of the iron trade * * * is attributed to the demand for structural iron. * * * We may safely predict that in the near future, not only will the larger, costlier structures require iron, but it will be employed in the medium class of business houses as well."

The writer of the above thought he was taking an optimistic and far-sighted view, but as a matter of fact he had not the faintest idea of what he was talking about. He speaks of iron being used for "the larger, costlier structures." Well, there was not a single genuine skyscraper at that time; the type which has really used structural shapes is a new one, of much later date than 1889. It was not until 1892 that structural shapes were considered of sufficient importance to have statistics of the production gathered, the first record being that in 1892, 453,957 gross tons were produced. In 1906 2,118,772 gross tons were produced. The production in 1889 was probably not one-tenth as large as that of 1906, while since 1889 there has been produced 20,000,000 tons of structural shapes.

Dispatches from Stockholm say many of the Swedish strikers in the metal working establishments are preparing to emigrate. The metal workers of Germany have contributed \$125,000 to the strikers.

Market Conditions, Prices in Producing and Buying Centers

Finished Product Lines Justify Pig Iron Activity.

PITTSBURGH — Just as the wise-
acres were asserting that the pace
set by the pig iron market in Pitts-
burgh district was too fast for present
prospects in finished lines, the Steel Cor-
poration interests, the railroads and the
consumers of steel pipe and tubing came
forward during the week just ended
with evidences of the substantial char-
acter of the present rejuvenation of the
iron and steel trades, with price ad-
vances on sheets, tin plate, pipe, boiler
tubes and wire, and with accelerated ac-
tivity in rails and every branch of the
tubing industry.

Meantime, all grades of pig iron held
firmly what they had gained during the
activity of the first three weeks of
September, and new high points were
established in sales of foundry and basic
irons for 1910. The continued shortage
of labor in the coke fields blasted the
hoped-for increase in production, and
gave a further excuse for advancing fur-
nace coke toward the \$3 mark. With 60
furnaces in blast out of 62 in what is
commonly known as the Pittsburgh dis-
trict, the fact developed that there was
an unmistakable shortage of coke for
prompt shipment in the Connellsville
region, and the situation was further ag-
gravated by evidences of a coming car
shortage in that district.

The advance of \$2 a ton on black and
galvanized sheets and tin plate, an-
nounced on September 28 by the Ameri-
can Sheet & Tin Plate Company, and in
effect the same day, came as a surprise
to the trade, which had been expecting
the old prices to hold until late in the
fall. Evidences of a disposition on the
part of the trade to buy far ahead at
the low prices, combined with new high
levels reached by pig iron and steel scrap,
hastened the advance. A week pre-
vious the combine had advanced blue
and annealed sheets \$1 a ton; and at
that time a number of the independents
put up their prices on black and gal-
vanized \$2, while there had been an ir-
regular upward movement in tin plate by
independents for 10 days; so that the ad-
vance may be said to have been antici-
pated by the manufacturers outside the
combine. This latest advance puts black
sheets, 28 gauge, at 2.30c, and galvanized
3.35c; while tin plate now stands at \$3.50
for 100-pound coke tin, with independ-
ents asking 10 and in some cases 15 cents
higher prices. A second advance in tin
plate by the leading interest is anticipat-

The minimum on steel bars also has
gone up to 1.45c, Pittsburgh, the Car-

negie Steel Company having advanced
its price to that figure. A number of
the independents are asking 1.50c. The
Jones & Laughlin Steel Company has
issued a new bar card similar to that
recently issued by the Carnegie Steel
Company. Although the extras as
printed are double those of the Car-
negie company, the Jones & Laughlin
company will charge half extras, while
the Carnegie company will charge full
extras.

The National Tube Company at the
close of the week issued an announce-
ment of an advance of \$2 a ton, effective
immediately, on wrought iron pipe and
boiler tubes. This advance has been
predicted for several weeks.

The American Steel & Wire Company
on Thursday also announced an advance
of one-quarter of one cent a pound, or
\$2.85 cents a ton, on steel galvanized
wire. The standard products of wire
nails, barb and plain wire were not af-
fected. Increased demand since the 1st
of September enabled the wire company
to make this advance above the prices
established during the depression. This
leaves, of all the lines of finished prod-
uct made by the Steel Corporation,
only the staples in wire and nails, and
some lines of tubing remaining at
the low prices existing during the slump
of last year.

The award of orders from the Penn-
sylvania, the St. Paul, Missouri Pacific
and Great Western, for standard rails, to-
talling 320,800 tons for delivery during
the winter and early months of 1910—of
which practically all is for Bessemer—
together with pending orders from the
New York Central and the Grand Trunk
and other northern lines for 300,000 tons
more, encouraged the belief that the
Carnegie rail mills would be permitted
to operate to their full capacity within
another month. The tonnage in sight
for 1910 is said by officials of the Car-
negie Steel Company, to be huge in its
totals, but the Eastern roads have been
slow in making their reservations. Not-
withstanding this lagging, Pittsburgh rail
experts believe 1910 will be a record
year. Of the 200,300 tons ordered by the
Pennsylvania, 75,000 tons will be rolled
by the Cambria, Lackawanna and Bethle-
hem; some little by the Pennsylvania
Steel and the remainder by the Steel
Corporation. With nearly half a million
tons of standard rails on the books of
the Illinois Steel Company, over half of
which is Bessemer, it seems practically
certain that future demands on the Steel
Corporation for Bessemer rails must
come to the Pittsburgh mills. The Ala-

bama mills already are well filled, a
large part of their tonnage being for ex-
port, which is said to have been taken
at a low price in a strongly competitive
market.

Contracts in the West for many miles
of heavy pipe lines for Oklahoma and
Texas gas also assure the pipe mills a
steady winter's run. The Kansas Nat-
ural Gas Company, in which Pittsburgh
people are largely interested, will take
advantage of the recent Oklahoma gas
decision to build a 60-mile 16-inch pipe
line from Joplin, Mo., into the Oklahoma
fields. The contract for this is to be
divided between the National Tube Com-
pany and the independents. Another
order from Ft. Worth, Tex., awarded the
Spang-Chalfant interests in Pittsburgh,
calls for 110 miles of heavy pipe. Or-
ders for boiler tubes also have in-
creased the work pending on the books
of the pipe and tube companies. One
requisition from the Baltimore & Ohio
railroad calls for tubes for 60 locomo-
tives. Spang, Chalfant & Company
will fill this order. The locomotives are
being built by the American Locomotive
Company.

The 1,200-ton contract for the struc-
tural work on the new additions to the
McKeesport Tin Plate Company's plant
at Portvue, Pa., about 750 tons, was
taken by the Riter-Conley interests,
while the same concern also will put in a
400-ton runway at Depew, N. Y. Fabri-
cating companies, however, are mostly
concerned with securing prompt deliver-
ies from the mills on work now under
way. During the week in Pittsburgh
work on several large structural con-
tracts was held up pending the arrival
of delayed shipments of material.

Pig iron more than held its own dur-
ing the week. One sale of 5,000 tons of
Bessemer for fourth quarter delivery
was reported at the new price of \$18,
Valleys. The iron went to an Ohio
consumer, though the transaction was ef-
fected through a Pittsburgh brokerage
house. The total transactions in Besse-
mer in Pittsburgh district for the month
of September is close to 180,000 tons,
of which probably 50,000 tons was for
1910 delivery. It was the heaviest move-
ment of iron in Pittsburgh district since
the record-breaking months in the heat
of the boom of 1907.

Just before the \$18 price on Bessemer
was reached the Republic Iron & Steel
Company secured 5,000 tons for prompt
delivery from the Bessemer Pig Iron As-
sociation at \$17.50. Last week the Bos-
semer Association sold 25,000 tons of
Bessemer to the Youngstown Sheet &
Tube Company, for first half delivery

at \$18, but it is doubtful if any more Bessemer for 1910 is to be had at that price. Valley interests are not anxious to quote prices on 1910 iron. Considerable activity was reported in basic, which has been moving slowly for several weeks. A 3,000-ton lot, for delivery during November and December, was sold to a local interest at \$17 furnace, which establishes a new high price for this year's delivery. There was still some basic to be had for prompt delivery Saturday, however, at \$16.50 and \$16.75. A 1,200-ton lot of off-grade basic was sold by local interests at a price equivalent to \$17.35, delivered, in Eastern Pennsylvania.

In foundry iron, one important Valley interest is said to have given orders to its agents to refuse proffers of \$17 for No. 2 for prompt delivery, although considerable sales were reported, in small lots, at \$16.75 and \$17. The Westinghouse purchase of foundry, basic, forge and Bessemer, totalled about 20,000 tons, about 15,000 of which was for foundry and forge, delivered during last quarter and first half. The foundry iron was taken on a basis of \$17, Valleys. An Eastern consumer also came into the market and took up a 10,000-ton lot of basic for delivery during fourth and first quarters at \$19.25, delivered in the Philadelphia district, which is equivalent to about \$17, Valleys. Basic iron at the close of the week was quoted at \$16.75 and \$17 for prompt, \$17 flat for first quarter 1910; foundry at \$17 for prompt, and \$17 to \$17.50 for first quarter, several makers being willing to make contracts for prompt No. 2 iron to run into next year at the \$17 price. Forge was quoted around \$16, with \$16.25 asked for first half, and there was a good market for malleable at \$17 and a shade higher.

The available supply of Bessemer is said to be very low for prompt delivery, and some of the Valley furnaces announce that they are practically sold out for the remaining quarter of 1909. Unless some unforeseen mishap affects the United States Steel Corporation's own furnace capacity, it is now believed the Corporation will have enough, or an almost enough pig iron from its own sources of supply to run its steel mills for the remainder of the year.

In unison with the other branches of the iron trade, Jackson county silveries advanced during the week to a new high price of \$19.90, delivered Pittsburgh, for .06 silicon iron. The leading Jackson county interest announced these new quotations: Silicon, .06, \$19.90, Pittsburgh; silicon, .08, \$20.90, Pittsburgh; silicon .10, \$21.90, Pittsburgh. To these quotations are added 50 cents for first quarter 1910, and \$1 for first half.

Ferro-alloys showed a trend toward

higher levels during the week. One sale of 10,000 tons of ferro-manganese for last quarter and first half was reported at \$42.50 to \$43 for the remainder of the year and \$44.50 for next year. These prices are said to be the minimum, and other sales of smaller tonnages are reported at higher prices, up to \$43.50 for prompt. Domestic makers of ferro-silicon advanced their prices 50 cents, and sales were reported of 12 per cent at \$25.50, Pittsburgh.

Heavy melting steel scrap led the old materials market during the week, selling up to \$16, and other items in the scrap market advanced 25 cents. The trend was upward, and maximum prices have not yet been reached in the finer grades.

Rush for Iron for Next Year; Foreign Ore Coming in.

NEW YORK — Large consumers have rushed into the market in the last 10 days to cover their requirements for first quarter and half for foundry irons. Sales for the week have included several blocks of 6,000 to 15,000 of foundry irons and pipe making irons, most of it for shipment during the first half of next year. Buffalo irons established themselves at \$16.50 for last half and \$17 for next year, at furnace, while Northern foundry No. 2X finally reached the mark set for it by the producers two weeks ago, \$18.50, delivered, some of it bringing a shade higher price. New England machinery makers were large factors in the market. In the midst of the selling, Southern iron went up to the new price of \$15, which hastened the closing of a number of inquiries. Stocks in the south were estimated early last week at 175,000 tons, while the Eastern Pig Iron Association claims to have less than 45,000 tons on hand.

Swedish ores, chiefly for furnaces in the Schuylkill Valley, are now coming into this country in considerable quantities. About 100,000 tons are under contract for next year. Ocean freights are steadily advancing, and Swedish shippers stand to have some difficulty in getting bottoms in which to make their shipments. Several interests having foreign ore are holding it in expectation of a price advance.

The Pennsylvania's rail order of something over 200,000 tons means at least 100,000 tons for rolling in the Steel Corporation mills. The allotment of this order has not been given out, but it is understood that the Pennsylvania, Cambria and Lackawanna Steel Companies each will get a share, while Bethlehem rails are specially specified in about 20,000 tons of the order. The Bethlehem Steel also will furnish a considerable tonnage of open hearth rails to the Norfolk & Western, and the Lackawanna

has sold 10,000 tons additional to the Northern Pacific, half of it for ferro-titanium rails. The United States Steel will roll 12,000 tons for the Mexican extensions of the Harriman lines. The Grand Trunk is in the market for 7-500 tons of standard rails and the New York Central's appointment for the winter's rolling may reach 250,000 tons, including the new work in Eastern New York. The New York, New Haven & Hartford also will be in the market for additional rails for its extensions. The orders of the St. Paul and Missouri Pacific went to the Chicago mills, while a part of the Chicago Great Western's order goes to the Carnegie Steel Company.

Prices have been advanced on all grades of foundry scrap. Offerings of foreign scrap being received and some sales made. Prices are being solicited on cargoes from Mexico, Cuba, and other southern countries. A lot of 700 tons of Swedish iron rails is offered for import at about \$20, duty paid. All bids on Panama scrap have been rejected by the Isthmian Canal Commission. It is probable the scrap will be brought to this country and auctioned.

City water works extensions now being advertised will call for about 8,000 tons of steel plates. Structural lettings during the week were light.

Rail Situation Presages Boom; All Grades of Iron Higher.

CHICAGO—Simultaneously with unexpected flights in coke and pig iron prices and advances in finished product lines that were not expected until later in the fall, came a buying movement in the steel rail trade this week which furnished food for speculation on the probability of the seemingly large capacity of the rail mills being insufficient to meet the demands of the railroads between now and the opening of the summer. Orders of 200,000 tons of standard rails by the Pennsylvania and a threat of a similar demand by the New York Central, together with the present state of the order books of the Illinois Steel Company, seem to indicate a record demand before the close of the coming winter.

Every effort will be made to get a maximum capacity out of the Gary plant if the expected rail rush materializes. Orders booked by the Illinois Steel Company from three western roads during the week just ended totalled 140,000 tons of rails, of which all but 20,000 tons are for Bessemer. One of the Western roads mentioned, the St. Paul, has specified for 75,000 tons. This brings the total standard rail orders on the books of the Illinois Steel to close to the half-million-ton mark. It is doubt-

ful if much of the Pennsylvania tonnage will be rolled this far west. One independent interest this week is reported to have closed for 10,000 tons of Bessemer rails for a Western road.

Great things are expected of the Gary plant in the rail line. The rail mills at Gary produced 40,000 tons during September. Another blast furnace there is ready to go in, and probably will be started early in the present month. In addition to the large rail orders, specifications for a round tonnage of track supplies also were filed by the railroads.

Every grade of pig iron was affected by the advance in Chicago district during the week just ended—the antics of the coke market being blamed for much of the advance. The consumption of all grades of pig iron has increased heavily; there is a shortage of steel, notwithstanding the fact that every steel-making plant in the district has been pushed to its utmost capacity for six weeks.

Southern iron is firmly established at \$15, Birmingham, for immediate delivery. Virginia foundry iron has been sold here for the present year's delivery, at a price equivalent to \$16, furnace. One Southern interest has withdrawn its \$15 quotations for first quarter of 1910; while the Tennessee Coal & Iron still has some iron to sell for first quarter at that price. The leading Jackson county, O., interest has raised prices on Jackson county silveries 50 cents for each of the first two quarters of next year. A considerable tonnage in foundry irons changed hands during the week. Several Northern makers are asking higher prices, but one or two furnaces continue to book orders for delivery through the first half of next year at \$18.50, delivered Chicago. Coke continues to be fractious as to price, and the closing of coke contract for next year is the chief worry of the furnace interests.

Mills are six to ten weeks behind in deliveries of steel bars, plates and shapes. Some construction work under way has been brought to a standstill owing to delays in delivering structural materials from the mills. Demand for sheets and tin plate under the new price scale just issued by the Steel Corporation interests was well sustained, showing that the market, though not expecting the advance at this time, was in good condition to take care of it.

Good-sized structural contracts were closed during the week. The American Bridge Company took the 2,000-ton contract for the Hearst estate building, in San Francisco. The Missouri Bridge Company secured orders aggregating 250 tons for a series of highway bridges in Oklahoma. Negotiations are still pending on the 2,500 tons for the Commonwealth Edison Company's new plant here. The projected free bridge at St.

Louis will require about 16,000 tons, and specifications for bidders will be ready early in the winter.

In the old materials market the call for steel scrap has been steady and firm prices have been realized wherever sales have been consummated. Wrought scrap is not so active as steel, but easily maintains the position which it held last week on a fairly steady demand. The call for cast scrap has been very insistent this week and prices are firmer, the dealers having been unable to keep pace with the requirements of the foundries. Railroad offerings have not been over-numerous, although it is known that large amounts of scrap are gradually being accumulated from the extensive repairs now being made. The Great Northern, Burlington, Rock Island and the Northwestern have lists out for the coming week totaling 9,500 tons. Old car wheels are quoted at \$18.50 and \$18.75; heavy melting steel scrap at \$16.50 to \$17, and railroad malleable at \$15.75 and \$16.

Eastern Iron Goes Up In Sympathy With Pittsburgh.

PHILADELPHIA — Foundry iron makers have passed the \$18.50 point on No. 2X for prompt deliveries, the rise coming in sympathy with the heavy Western demand and the sudden influx of Eastern buyers who wanted iron for next year. The local locomotive interest took 3,000 tons of special grade foundry iron at a trifle under \$18.50, delivered, and standard Eastern Pennsylvania brands at the end of the week commanded \$18.50 to \$19, delivered, for No. 2X for this year. The absolute minimum on sales during the week was about \$18.35. For next year's deliveries, the prices quoted seem almost prohibitive—\$19.50 and higher being asked for first half. A number of the Eastern furnaces are refusing to quote further ahead than first quarter as yet. Virginia irons have advanced as high as \$16, at furnace, for No. 2X for this year's delivery. Virginia interests also are refusing to quote on next year's deliveries in some cases, though it is reported that a considerable tonnage has been quietly taken up at prices a shade higher than those obtained for fourth quarter iron. One lot of 2,000 tons of basic was sold for prompt shipment at \$18, delivered, but it is said \$18 could still be done on basic for first quarter of 1910.

Buffalo furnaces are said to have booked 55,000 tons during the week. Demand for malleable and pipe-making irons still is strong.

The Steel Corporation will furnish the structural steel, 16,000 tons, for 3,000 steel cars the Norfolk & Western is to build at its own shops. Billers

are very active, ranging from \$17.60 to \$28.60, with the minimum on forging billets easily \$30. Structural contracts for the week were small.

Record Tonnes Sold Of Steel Making Irons.

CINCINNATI—Order books of Southern Ohio furnaces are filled to capacity for the remainder of the year. The month has seen a new record in tonnages of steel making and foundry irons sold. One sale of Southern iron, 1,000 tons, for prompt shipment, at \$14.50, Birmingham, was reported the forepart of the week after which the seller, the last Alabama interest to advance, came into the \$15 column. The Alabama furnaces, however, are still ready to quote the \$15 price well into the next year, sometimes past the first quarter.

The selling of Northern iron in this section of Ohio has been practically limited to two makers during the past week, and one of these is now out of the market. Ruling prices during the week were \$17 on prompt No. 2, and \$17.50 for next year. Inquiries in this market from two large melters call for 8,000 tons of basic, neither of which has yet been closed. The situation in coke is still unsatisfactory, many of the producers refusing to contract further than the first quarter of next year. In their special report for the Industrial World, Rogers, Brown & Company this week say:

In both East and South, as well as this territory, prices have advanced during the week. Some of the furnaces which have been out of the market for the first half of the year are taking on a little business, but there are others still refusing to quote and there is absolutely nothing doing for period beyond July 1, next. Current orders for spot shipment continue in good volume and the business for 1910 keeps up with unflinching buoyancy.

It is assured that September will show one of the highest marks for monthly production that we have seen in a long time and it is well to note that this increased production, large as it has been, has been but the means to an end for furnishing consumers who, in little more than two months, have seen their business improve from practically nothing to full output.

The increase in consumption during the last two years has more than kept up with the producing activity, many foundrymen and others taking the time of low prices for labor and material to inaugurate changes, increase plants and productive capacity which they would not have attempted under other conditions. The result is there is now facing us an amount of melting capacity to be filled which has never before been equaled.

Coke is still on the move, and after being dormant for so long, even after the start of the iron trade, it is now making up for lost time. Prices are advanced over a week ago and sales of large tonnage during the week are reported. Some plants are operating with an inadequate labor supply, thus not get-

ting full output, and this shortage is hurting production everywhere. There has been a slight increase in production over our previous report, but not as much as in demanded.

Few Idle Furnaces In Birmingham District.

BIRMINGHAM—Southern iron makers are getting \$15 for their pig iron, which is two and a half dollars rise in two months. Headed by the Tennessee Company all makers are doing their best to get a maximum output. October's production will be at least normal and in all likelihood will exceed that of normal times. The Sloss-Sheffield Company is operating six of its seven furnaces, the Alabama Consolidated three out of its four, the Republic, Woodward & Birmingham Coal & Iron have each an idle stack about ready to blow in, and the Southern Steel will blow in one or two furnaces early in the month.

The Southern Steel, under the reorganization, was provided with several millions of rehabilitation money, and this is being expended as fast as men and materials can be secured, repairing the steel plant and furnaces at Gadsden, furnaces at Trussville and Chattanooga, and in North Georgia, and in building a \$1,500,000 steel rod, wire and nail mill at Gadsden, adjacent to the steel plant. The old wire mill at Ensley has been abandoned. This work is being done under direction of W. H. Hassinger, president, and is proceeding simultaneously at all plants. Mr. Hassinger is surrounded by experts in Southern steel and iron manufacture, and the work is being done in the most modern way.

The Atlanta, Birmingham & Atlantic Railroad is rapidly completing its line from Pelham to Bessemer, and into the mining fields at Mulga, and is condemning property for rights of way from Bessemer to Birmingham. The road ought to be operating through trains from Alabama mines and furnaces to the Port of Brunswick in two months. The Mobile & Ohio Railroad, through President Russell, announces the operation of trains into Birmingham over the route of the Illinois Central not later than January 1. The road already has its warehouses and terminals here.

Much of the coal trade, which has been dull in the South for 18 months and was slow to recover, has at last done so and the prediction is that every miner will have a day's work each day in the week by the end of the year. The larger corporations, which are also iron makers, have withdrawn from the coal-selling market on account of the activity in pig iron, and the smaller operators are beginning to get some of the increasing railroad business. For the first time in two years the Louisville & Nashville railroad shops at Decatur, Ala.,

are operating on full time. Car service reports showed an increase of ten thousand cars in August over the same month during the preceding year.

Practically all the iron makers are out of the spot market except for regular customers. No iron corporation is seeking buyers; it is the other way. The steady advance in the price of pig iron from the low ebb of \$10.50 in May, has become so pronounced, that a runaway market would not be at all surprising.

The Tennessee Company's steel end at Ensley is in prime shape. The company has rail orders on hand for the rest of the year at maximum capacity, and orders for 85,000 tons for delivery in 1910.

The Birmingham district must have about two more paydays before the full tide of rejuvenation becomes evident, but by November 1 there will be perhaps greater activity in the Southern industrial field than ever before.

Coke Nears \$3 Mark; Production Falls Off Slightly.

CONNELLSVILLE — Furnace coke for prompt delivery cannot be had at much under \$2.75, though it is still quoted at \$2.60 to \$2.85. There has been heavy buying for next year around \$2.85 ovens, and at that price one large deal was put through for about 200,000 tons, extending from November through 1910. This is an extraordinarily favorable figure, however, and a number of operators are holding firmly for \$3 furnace coke for next year's delivery.

Buyers who a week ago boasted that they would get prompt furnace coke for \$2.40 have revised their opinions. Foundry coke stands around \$3. One contract was made at \$3.10, but it still seems possible to get some quantity of it at the lower figure.

There is a shortage of coke at the ovens and the scarcity of labor was made more apparent during the week just ended. According to the "Courier's" figures for the week ending Saturday, September 25, production fell off slightly. The total number of ovens in blast was 33,092, as against 32,917 the previous week, out of a total of 38,559 ovens. In the Connellsville region proper 269,139 tons were manufactured as compared to 273,390 tons the previous week. The oven comparison shows that 21,031 ovens were in operation as against 21,008 the previous week. In the Lower Connellsville region the tonnage was 149,817 as against 153,258 the previous week. The total decrease in production amounted to 7,692 tons. Shipments were 13,722 cars against 13,350 cars the week previous. The "Courier" in its review says:

It may seem odd in the face of improved conditions that a decrease in production should be noted at this time, especially when there is an ex-

tremely heavy shipment counted by cars, but practically every car of standing coke was moved from the sidings. This stock coke has been accounted for in previous reports. The failure in production is due to labor conditions. Operators generally blame foreign agents for many of the deserters. It is alleged that foreign agents and bankers are demanding \$1 a head for workmen. They are shifted and shunted around over the region and soon become dissatisfied with their conditions, and upon returning to the agent are usually sent to some other plant at \$1 a head again. Some operators have positively refused to deal through the agents for workmen.

No complaints are being made of a water supply although some of the smaller streams are low. The majority of the operators have fortified themselves with wells. A car shortage does not appear to be in sight and the railroad agents have started early on the job of seeing that all plants are supplied with cars. Box cars are somewhat scarce. During the past week the Baltimore & Ohio has added hundreds to the service. The company has but few cars now out of service and a noticeable decrease is to be seen in all the yards. Quite a few foreign cars are on the tracks, but these are scheduled westward for the grain movement.

Panama Scrap Bids Rejected.

All the proposals made for the purchase of the scrap iron, steel, brass, copper, etc., left by the French company on the Isthmus of Panama have been rejected by the War Department.

No reason is given at the War Department or at the office of the Isthmian Canal Commission for the rejection of the bids, but it is unofficially stated that Colonel Goethal, chief engineer of the commission, believed that the prices submitted were too low. Colonel Goethal recommended that the bids be rejected, and the secretary of war accordingly issued an order to this effect.

It is believed that this old material will be sold in New York piecemeal, and will be transported there as ballast by the steamships belonging to the Isthmian Canal Commission.

Increase in Iron Ore Imports.

From the statements of the Federal Bureau of Statistics of imports of manufacturers' materials for the seven months ending July 31, last, the following figures are taken:

Article	Quantity (millions)		Value (millions)	
	Seven months ending July 31	1908	Seven months ending July 31	1909
Iron ore	846.3	1,668.5	1.2	2.0
Pir iron	115.9	172.0	1.5	2.5
Steel ingots, bil-				
lets, etc	12.6	20.3	0.8	1.5
Pig tin	45.6	56.1	13.3	15.9

Among the new industries that have sprung into being in Hongkong lately is a complete installation of machinery for the wholesale manufacture of brass work.

Sklsp Steel Grooved	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00
Sklsp Steel Sheared	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00
Railroad Spikes	34.00	34.00	34.00	32.00@33.00	32.00@33.00	32.00@33.00
Sheets, No. 28	45.00@46.00	44.00@45.00	44.00	44.00	44.00	44.00
Galvanized Sheets, No. 28	67.00@68.00	65.00@67.00	65.00	65.00	65.00	65.00
Beams, 3 to 15 inches	30.00	30.00	30.00	28.00@29.00	28.00@29.00	28.00@29.00
Beams, over 15 inches	31.00	31.00	31.00	30.00@31.00	30.00@31.00	30.00@31.00
Channels, 3 to 15 inches	30.00	30.00	30.00	28.00@29.00	28.00@29.00	28.00@29.00
Channels, over 15 inches	31.00	31.00	31.00	30.00@31.00	30.00@31.00	30.00@31.00
Tees, 3-inch and larger	30.00	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00
Zees, 3-inch and larger	31.00	31.00	31.00	29.00@30.00	29.00@30.00	29.00@30.00
Angles, 3 to 6 inches	30.00	30.00	30.00	28.00@29.00	28.00@29.00	28.00@29.00
Angles, over 6 inches	31.00	31.00	31.00	30.00@31.00	30.00@31.00	30.00@31.00
Tank Plate	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00
Boiler Plate	30.00	30.00	30.00	30.00	30.00	30.00
Hoops	30.00	30.00	30.00	30.00	30.00	30.00
Bands	24.00	24.00	24.00	24.00	24.00	24.00
Bessemer Steel Bars	29.00	28.00	28.00	27.00@28.00	27.00@28.00	27.00@28.00
Open-Hearth Steel Bars	29.00@30.00	28.00	28.00	27.00@28.00	27.00@28.00	27.00@28.00
Common Iron Bars	30.00	30.00	30.00	30.00	30.00	30.00

and Various Finished Iron and Steel Products.

Aug. 14.	Aug. 7.	July 31.	July 24	July 17.	July 12	July 5.	June 27	June 21.	1908 Oct. 3.
16.90	16.90	16.40@16.90	16.40@16.90	16.40	16.15@16.40	16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15
16.15@16.40	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.15@15.40
16.90@17.15	16.90@17.15	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.15@16.40	15.75@15.90
16.15@16.65	16.40@16.65	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.65@15.90	15.25@15.40
16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	16.15@16.40	15.90@16.15	15.65@15.90	15.40@15.65
15.15@15.65	15.40@16.15	14.90	14.90	14.90	14.65@14.90	14.90@15.15	14.90@15.15	14.90@15.15	14.40@14.65
20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	15.90@20.00	19.50@20.00	21.25@21.75
63.50@65.00	67.00@68.00	67.00@68.00	62.00@63.00	62.00@63.00	63.00@64.00	63.00@64.00	61.00@62.00	62.00@64.00	25.00@26.00
24.00@25.00	23.50@24.50	23.50@24.50	24.00	24.00	24.00	24.00	24.00	24.00	25.50@26.50
25.00@27.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	30.00@30.50
29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	31.00@31.50
42.95@43.95	43.45@43.95	43.45@43.95	43.45@43.95	43.45@43.95	42.95@43.95	42.95@43.95	41.95@42.45	42.45@42.95	
12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	45.00@46.00
14.50@15.00	14.50@15.00	14.50@15.00	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	13.75@14.25
14.00@14.50	14.00@14.50	14.00@14.50	14.00	14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.75@14.00	14.25@14.75
13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.75@14.25
12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	13.25@13.75
									12.25@12.75
13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	12.00@12.50	11.75@12.00	13.00@13.50
13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.50@11.75	13.00@13.50
13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.25@11.50	12.50@13.00
12.00@12.50	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.00@11.50	11.00@11.50	10.75@11.00	12.00@12.50
11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	10.50@11.00	10.50@11.00	10.25@10.50	11.50@12.00
11.25@11.75	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.50@10.75	10.50@10.75	10.25@10.50	10.75@11.25
17.00@17.50	16.50@17.00	16.50@17.00	16.00@16.50	16.00@16.50	16.50@16.75	16.50@16.75	16.75@17.00	16.75@17.00	16.75@17.00
17.00@17.50	15.50@15.75	15.50@15.75	15.50@15.75	15.50	15.50	15.50	15.50	15.50	15.75@16.00
16.00@16.50	15.25	15.25	15.25	15.25@15.50	15.25@15.50	15.25@15.50	15.25@15.50	15.25@15.50	15.50@15.75

24.00	24.00	24.00	23.00@24.00	23.00	23.00	23.00	23.00	23.00	25.00
26.00	26.00	26.00	25.00@26.00	24.00@25.00	24.00@25.00	23.50@24.00	23.50@24.00	23.00@24.00	25.00
28.00	28.00	28.00	28.00	26.00@28.00	25.00@27.00	25.00	25.00	25.00	27.00
25.50@26.00	25.50@26.00	25.50@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	27.50
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.00
28.00	28.00	27.00	27.00	27.00	25.50@27.00	25.50@27.00	25.50@27.00	26.00@27.75	23.00@25.00
29.00	28.00	27.00@28.00	27.00@28.00	27.00@28.00	26.50@27.00	26.50@27.00	26.50@27.00	26.75@27.75	24.00@26.00
30.00	30.00	29.00	29.00	29.00	27.75@28.75	27.75@28.75	27.75@28.75	27.75@28.75	27.00@28.00
31.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00	29.00	29.00	29.00	31.00@32.00
31.00	31.00	31.00	29.00@30.00	29.00	29.00	29.00	29.00	29.00	33.00
31.00	31.00	31.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	34.00
27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	25.50

26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	29.00@30.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	30.00@32.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	34.00@36.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	50.00
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	71.00
28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	26.00	32.00
30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	34.00
28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	26.00	32.00
30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	34.00
29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00	27.00	27.00	33.00
29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00	27.00	27.00	32.00
28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	26.00	32.00
30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	34.00
28.00@30.00	28.00@30.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	32.00
30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	28.00	34.00
30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	36.00
24.00	24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	24.00	24.00	24.00	28.00
26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	28.00
26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	28.00
29.00	29.00	29.00	29.00	29.00	28.00@29.00	29.00	29.00	29.00	28.00

STEEL PLATES.

Base prices, tank quality, ¼-in. thick, per 100 lbs., f. o. b., Pittsburgh:

6¼ to 100 inches wide\$1.40

Extras over base price—

3-16 inch thick .....	.10
Gauges 7 and 8 .....	.15
Gauge 9 .....	.25
Gauges 10 and 11 .....	.25
Circles .....	.20
Sketches .....	.10
Boiler and Flange quality .....	.10
Marine Steel .....	.40
Widths over 100, to 110 in .....	.05
Widths over 110, to 115 in .....	.10
Widths over 115, to 120 in .....	.15
Widths over 120, to 125 in .....	.25
Widths over 125, to 130 in .....	.50
Widths over 130 in	1.00

IRON AND STEEL SCRAP.

Old steel rails, re-rolling..	\$17.50
Old steel rails, remelting..	17.75 \$18.50
Steel axles	21.50 22.00
Heavy melting scrap	16.50 17.50
Low phosphorus	21.00 21.50
Sheet scrap	15.25 15.75
No. 1 wrought scrap	17.50 18.00
Machine shop turnings ...	13.00 13.50
Cast borings	11.00 11.50
No. 1 cast	15.75 16.00
Old car wheels	17.25 17.50
Old iron rails	18.50 19.00
Axle turnings	14.00 14.50
Railway malleable	16.00 16.25

TIN AND TERNE PLATES.

Official prices, f. o. b., Pittsburgh—
Coke tins:

14x20, I. C.	\$3.65
14x20, 100 lbs.	3.50
14x20 95 lbs.	3.45
14x20, 90 lbs.	3.40

Charcoal tins:

A Grade, 14x20, I. C.	4.15
A Grade, 14x20, 100 lbs.	4.00
Ternes:	
20x28, I. C.	6.80
20x28, 200 lbs.	6.50

STEEL RAILS.

Fifty pounds and Heavier—

500-ton lots and over	\$28.00
Car load lots	30.00
Less than car load lots	32.00

Light Rails—

12 and 14 pounds	\$30.00
16, 20 and 25 pounds	28.00
30 and 35 pounds	28.00
40 and 45 pounds	28.00

Relaying Rails

Subject to inspection, f. o. b. Pitts-

Stand'd 50 lbs. & heavier..	\$22.00	\$22.50
25 to 40 lbs.	23.00	23.50
16 to 20-pound rails	24.00	24.50
12-pound rails	25.00	26.00

STEEL SHEETS.

Official prices, per 100 lbs., f. o. b., Pittsburgh—
Gauge.

	Black.	Galv.
30	\$2.35	\$3.55
20	2.30	3.45
28	2.30	3.35
27	2.25	3.15
25-26	2.20	2.95
22-24	2.15	2.75
17-21	2.10	2.60
15-16	2.05	2.50
13-14	2.00	2.40

Blue Annealed.

10 and heavier	\$1.70
11-12	1.75
13-14	1.80
15-16	1.90

Corrugated Roofing.

Per square, 28 gauge, f. o. b. Pitts-	
burgh—	
Painted	\$1.55
Galvanized	2.80

WIRE AND NAILS.

Prices to jobbers in car load lots, per 100 lbs.; retailers 5 cents additional:

Wire nails	\$1.80
Plain wire	1.60
Painted barb wire	1.80
Galvanized wire	2.10

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per cent pure are held at 24c per pound in ton lots.

For small lots of 100 pounds and over advances of 3c per pound are charged.

Rods and wire.....base price 32 cents
Sheetsbase price 34 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

	Per Ton.
Mine-run	\$1.10@1.20
¾-inch lump	1.20@1.30
1¼-inch lump	1.30@1.40
3-inch lump	1.55@1.65
1¼-inch nut	1.10@1.20
¾-inch slack .....	.55@.65

At Buffalo—

	Pgh.	Frep't
Mine-run	\$2.35	2.05
¾-inch lump	2.45	2.15
1¼-inch lump	2.55	2.25
¾-inch slack	1.85	1.70

At Cleveland—

	Pgh.	No. 8
Mine-run	\$2.10	\$1.80
¾-inch lump	2.20	1.90
1¼-inch lump	2.25	2.00
1¼-inch nut	2.10	1.80
¾-inch slack	1.55	1.45

At Detroit—

Mine-run	\$2.50	\$2.05
¾-inch lump	2.60	2.15
1¼-inch lump	2.70	2.25
1¼-inch nut	2.50	2.05
¾-inch slack	2.00	1.65

At Chicago—

Mine-run	\$3.00	\$2.55
¾-inch lump	3.10	2.65
1¼-inch lump	3.20	2.75
1¼-inch nut	3.00	2.55
¾-inch slack	2.45	2.25

MERCHANT PIPE.

Base discounts, car load lots, subject to one point and 5 per cent extra to large jobbers.

	Steel	
	Black.	Galv
½ and ¾-inch .....	.72	56
¾-inch .....	.73	56
½-inch .....	.76	64
¾ to 6-inch .....	.80	70
7 to 12-inch .....	.75	60
Extra strong plain ends—		
½ to ¾-inch .....	.65	53
½ to 4-inch .....	.72	60
4½ to 8-inch .....	.68	56
Double extra strong—		
½ to 8-inch .....	.61	50

WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe car load prices to consumers; prices to jobbers one point and 5 per cent.

¼-inch .....	.69	..
½ and ¾-inch .....	.70	56
½-inch .....	.73	61
¾ to 6-inch .....	.77	67
7 to 12-inch .....	.72	57

Extra Strong and Plain Ends—

½, ¾ and ¾-inch .....	.62	50
½ to 4-inch inclusive .....	.69	57
4½ to 8-inch, inclusive65	53

Double Extra Heavy plain Ends—

½ to 8-inch, inclusive58	47
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BOILER TUBES.

	Steel	Iron
1 to 1½ inches52	45
1¾ to 2¼ inches64	45
2½ inches66	50
3¾ to 5 inches .....	.72	57
6 to 13 inches .....	.64	45
Less than car load lots, two points less.		
2½ inches and smaller, over 18 feet, 10 per cent, net extra.		
2¾ inches and larger, over 22 feet, 10 per cent net extra.		

MERCHANT STEEL.

Cold rolled and ground shafting, 60 per cent off, car load lots; 56 per cent off less than car load lots; delivered in base territory:

Planished Tire Steel	\$1.40@1.50
Iron finish, up to 1½x½ in. ..	1.35@1.45
Iron finish, 1½x½ in. and over	1.20@1.30
Toe Calk Steel	1.70@1.80
Railway Spring Steel	1.75@1.85
Cutter Shoe	1.95@2.05
Flat Sleigh Shoe	1.55@1.65
Crucible Tool Steel	7.00@8.00
Open-Hearth Spring Steel ..	2.05@2.30

Freight Rates On Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig Iron, from Virginia furnaces to Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	\$2.35	\$3.60	\$3.20	\$2.35	\$3.30	\$3.35
Bristol	4.35	3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.90	2.35	3.60	3.20	3.00	4.00
Kayula, Ivanhoe, Rural Retreat ...	2.90	2.35	3.60	3.20	4.35	4.40
Pulaski, E. Radford, Max Meadows. 2.90	2.35	3.60	3.20	3.25	4.20	4.25

Pig Iron from Birmingham, Ala., tons of 2,240 lbs. to—	Cleveland ...	1.65
Boston, by water	Columbus	1.65
Chicago	Cincinnati	2.10
Cincinnati and Ohio River	Chicago	2.65
Cleveland	East St. Louis	2.80
Milwaukee and Northwest	Hamilton, Ont.	2.20
New York, all rail	Joilet	2.65
New York, rail and water	Louisville	2.65
Philadelphia, all rail	New York	2.85
Philadelphia, rail and water	Pittsburgh .....	.80
Pittsburgh	Philadelphia	2.15
St. Louis	Richmond, Va.	3.04
To Pittsburgh from—	Toledo	2.25
Dunbar Furnaces	Valley Furnaces	1.35
Kittanning Furnaces		
Scottdale Furnaces		
Valley Furnaces		
Wheeling		
Valley Furnaces to—		
Cleveland		

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	BILLETS.
Baltimore	\$2.15	\$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville .....	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va. ....	.90	1.00
Youngstown .....	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango Valleys ..	1.00	
Wheeling	1.00	

COKE.

From Connellsville region, per 2,000 pounds to—	
Boston	\$3.50
Buffalo	1.00
Baltimore	1.15

FINISHED PRODUCTS.

Finished Steel Products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire, nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—	
Albany .....	.16
Buffalo .....	.11
Boston .....	.18
Baltimore .....	.14½
Canandaigua .....	.13½
Cleveland .....	.10
Columbus .....	.12
Cincinnati .....	.15
Chicago .....	.18
Harrisburg .....	.14½
Louisville .....	.18
New York .....	.16
Norfolk .....	.20
Philadelphia .....	.15
Rochester .....	.11½
Richmond .....	.20
Scranton .....	.15
St. Louis .....	.23
Washington .....	.14½
To Pittsburgh from—	
Mahoning and Shenango Valleys..	.05
Wheeling .....	.05

COAL.

Coal Rates from Mines—	
To Ashtabula	\$1.00
To Allegheny, Pan'dle Ft. W. trk...	.43
To Allegheny, West Penn tracks..	.48
To Allegheny, B. & O. ....	.35
To Pittsburgh, P. R. R. Main Line..	.43
To Pittsburgh, B. & A. V. Div...	.48
To Pittsburgh, B. & O. ....	.33
To Valleys .....	.70
To Buffalo	1.25
To Cleveland	1.00
To Detroit	1.40
To Chicago	1.90
To New York, gross ton	2.25
To Philadelphia, gross ton	2.00

From Freeport—	
To Buffalo	1.10
For Lake Shipments— Cargo. Fuel.	
To Ashtabula .....	.88 .98
To Cleveland .....	.88 .98
To Erie .....	.88 .98

West Virginia rates from mines—	
To Chicago	1.90
To seaboard points, gross ton	1.80

From No. 8, of Ohio—	
To Cleveland .....	.90
To Chicago	1.55
To Detroit	1.14

TIN PLATE.

Per 100 lbs., Pittsburgh to—	C.L.	L.C.L.
Boston, Mass	18	21
Albany, N. Y.	16	19
Baltimore, Md.	14½	17½
Birmingham, Ala.	41	68
Cleveland, O.	10	13
Columbus, O.	12	15
Cincinnati, O.	15	18
Concord, N. H.	18	21
Charlotte, N. C.	39	61
Charleston, S. C.	33	70
Charleston, rail and water..	23½	31
Covington, Ky.	15	18
Chattanooga, Tenn	33	65
Chicago, Ill.	18	21
Canadaigua, N. Y.	13½	16
Des Moines, Ia.	37½	48½
Detroit, Mich	15	18
Denver, Mich	84	118
Dover, Del.	17	20
Buffalo, N. Y.	11	13
East St. Louis	22½	26
Hartford, Conn.	18	21
Indianapolis, Ind.	17	19½
Louisville, Ky.	18	21
Montpelier, Vt.	21	24
Minneapolis, Minn.	32	42
New York	16	19
Norfolk, Va.	20	24
Natchez, Miss.	32	61
Portland, Me.	18	21
Providence, R. I.	18	21
Philadelphia, Pa.	15	18
Richmond, Va.	20	24
Rochester, N. Y.	11½	13½
Syracuse, N. Y.	13½	16
St. Louis, Mo.	22½	26
Terre Haute, Ind.	18	21
Topeka, Kas.	54½	68
Trenton, N. J.	16	19

Chicago Demands Electrification; Big Railroads Prepare to Resist the Order

ILLINOIS CENTRAL AND OTHER SYSTEMS DECLARE PROJECT TOO COSTLY—CITY COUNCILS TAKE FIRST STEP TOWARD FORCING IMPROVEMENT BY JANUARY, 1912.

The Chicago City Councils last week took preliminary steps toward enacting into law the most sweeping railroad electrification ordinance ever offered to any municipality in the United States.

Aimed primarily at the Illinois Central Railroad Company, the measure hits every railroad line operating within a radius of eight miles of the City Hall. It contemplates electrification improvements that eventually will cost in the vicinity of \$150,000,000.

If it is passed in its present form and upheld by the Courts, every one of the 26 trunk lines entering the city and every terminal, transfer, belt or industrial road within the prescribed limits will be forced, before January 1, 1912, to substitute electricity for steam power or quit doing business. Its going into effect will mean practically the abolition of the smoke nuisance in Chicago history.

Without exception the officials of the Chicago railroads were astounded at the sudden turn which the electrification problem has taken, and heartily condemn the action of the city officials. The introduction of the ordinance was called unbusiness-like, outrageous, foolish, silly, inopportune and irrational. Although all of the presidents interviewed did not say so flatly, there is not the slightest doubt that should the ordinance become a law, it will not be obeyed until the highest Court passes upon its validity.

Electrification Too Costly.

Prior to the springing of last week's bomb by the Chicago Councils, it was announced that after months of investigation, officials of the Illinois Central had decided that electrification of the company's suburban lines is too expensive to be undertaken and had so informed the city authorities. The cost is declared prohibitive.

It is said that in his annual report to the stockholders, J. T. Harahan, president of the company, will advise them that the work would cause a reduction to five per cent of the annual dividend rate. It is now seven per cent and \$2,000,000 would be taken out of the stockholders' pockets.

The plans, as originally submitted to the Illinois Central officials, called for

the expenditure of nearly \$20,000,000 between Grand Crossing and Randolph street. This is exclusive of expenditures planned later for the terminals beyond Grand Crossing and on other branches. The estimate includes the rearrangement of tracks, building of electric power plants and the purchase of equipment.

Electrification Tests in France.

The important French railway, Paris-Lyons-Mediterranee, is at present carrying out experiments in conjunction with Messrs. Alioth, with a view to converting the Cannes-Vintimille section of its line from steam to electricity. The experiments are being made on the Grasse-Mouans-Sartouse section, which is very convenient for the purpose, as it includes some of the steepest grades and sharpest curves, and is also not crowded with traffic. The overhead wire is suspended flexibly by means of a system patented by Messrs. Alioth, which does not involve the use of separate suspension wires. Wooden poles are used at present, but these are to be replaced by metal lattice work supports later on. The locomotive used weighs 140 tons, and is approximately the same length (65 feet) as the normal steam locomotive in use on the road, including the tender. There are eight axles, of which the four central ones are driving axles with large wheels. The overhead line is supplied with single-phase alternating current at 12,500 volts, but this is converted on the locomotive by means of a special permutator, devised by Messrs. Auvert & Ferrand, into direct current at a voltage adjustable between 0 and 600 at will. The motors are of the ordinary direct-current type of 450 horsepower each, and there are four to each locomotive. They are flexibly geared by means of spur gear to the four driving axles. The total draw-bar pull exerted by the locomotive is 16,400 pounds at a speed of 37 miles per hour, and 10,600 pounds at a speed of 62 miles per hour.

Ask Damages of Pennsy.

Through a decision rendered in the Circuit Court of Cook county, Ill., September 24, the City of Chicago may recover damages of nearly \$2,000,000 from the Pennsylvania Railroad, whose construction of viaducts lessened the value of adjoining property.

New Link in Ohio.

F. D. Carpenter and others, of Fostoria, O., have applied for a charter to connect Fostoria and Freemont by trolley.

INCREASES OF CAPITAL.

Additional Securities Authorized for Contemplated Improvements.

Railroads in Pennsylvania have filed increases in capital at the State Department, at Harrisburg, within the past two weeks as follows—most of the increases being for improvements and extensions:

Lewisburg & Tyrone Railroad Company, from \$100,000 to \$700,000.

Cleveland & Pittsburgh Railroad Company, from \$20,065,665.33 to \$20,649,415.33.

Woodlawn Electric Street Railway Company, Beaver county, to \$75,000.

Brookville & Mahoning Railroad Company, from \$10,000,000 to \$15,000,000. Work on this road has been resumed.

Black Lick & Yellow Creek Railroad Company, Clearfield county, from \$100,000 to \$200,000.

Freight Advance Proposed.

According to the notice of proposed revision of freight rate classification sent out from Chicago, these advances are proposed:

Iron and steel wrenches, 20 per cent; gravestones, tombstones and mantels, 20 per cent.

Wabash-Pittsburgh Improvements.

The \$1,400,000 improvements of the Wabash-Pittsburgh Terminal and the West Side Belt railroads are nearing completion. On the Wabash-Pittsburgh Terminal three tunnels, at Craigshead, Coen and Hunters, will be completed this week, leaving only three small ones to be finished. The improvements on the West Side Belt will be completed by December 1. The freight station at Avella has been completed, and track scales are being constructed at Rook.

New Yards for Union R. R.

The new yards of the Union Railroad at Oak Hill, near Pittsburgh, are about completed, but they will not be put into service for some time. The road also is building new yards at Universal, with a capacity of 500 cars, for handling the increased output of the Universal Portland Cement Company.

Testing High Carbon Rails.

The Pennsylvania is laying more new steel rails on passenger tracks in the Harrisburg yards, where they are tested on the curves. The new rails contain much more carbon than the old style and are expected to wear much longer on sharp curves than the old style rail.

The New Lake Erie Bridge.

The last of the structural work for the new Pittsburgh & Lake Erie bridge over

the Ohio, at Beaver, was sent out from the McClintic-Marshall yards at Pittsburgh last week. Rapid progress is being made on the Beaver end of the bridge, and four concrete spans over the Cleveland and Pittsburgh division of the Pennsylvania Railroad, to be completed this week.

PROJECTS IN THE SOUTH.

Tapping West Virginia.

Twenty of the 40 miles of the Hampshire Southern Railroad, building from Momney, W. Va., to Petersburg, Va., via Morefield, is graded and ready for the ties and rails. Work was started on the line late in the spring. According to the present plans, locomotives are to be running into Petersburg by January 1 next.

While the present road is being built to Petersburg only, it will not stop there. There are three routes by which it can be profitably extended, it is said. One is up the north fork of the South Branch of the Potomac, crossing the mountains, and connecting with the Chesapeake & Ohio and the Western Maryland at Durbin. Another outlet is the continuation of the line from Petersburg by way of Franklin on to Monterey, Va. The third outlet is taking the south fork of the river at Moorfield, skirting the Virginia border to the south, and crossing over to Harrisonburg.

Surveying Kentucky Interurban.

Six months ago a charter was granted for the building of an interurban road in Kentucky, between Cincinnati and Lexington, Ky., and between Marysville and Louisville. The Reliance Engineering Company, of Cincinnati, was selected by the promoters to design and construct the entire system, which will be over 200 miles in length, and it is estimated will cost \$3,000,000.

Last week the Reliance Company started out a party of 12 engineers to make the preliminary surveys of the first section. Actual construction, it has been decided, will commence about December 1. Grants of land for the right of way have already been made through several counties. W. T. Blackburn, of Grant county, Kentucky, is president of the company.

Site for Memphis Terminal.

For a consideration understood to be close to half a million dollars, the Frisco System has purchased from the Memphis Park Commission a tract of land comprising 800,000 square feet on East Rayburn avenue, Memphis. It is understood a new terminal station will be built for the Frisco and Rock Island service.

TRY NEW ORE CAR.

Pittsburgh Product Being Tested by Michigan Road.

The recently patented, rapid-dumping steel ore car, made by the Clark Car Company, of Pittsburgh, arrived at Marquette, Mich., last week, to be tried out on the L. S. & I. railway. Charles H. Clark, inventor of the car and president of the company, was in Marquette during the week and will observe the experiments to be made. The car has recently been tried out on the D., M. & N. railway in Duluth, where it was unloaded in 28 seconds, using the air pump, and in 45 seconds, using the hand pump. It takes from 10 minutes to an hour to unload the steel cars now used on the L. S. & I., and other ore-carrying railroads.

Though steel practically replaced wood in the construction of ore cars five years ago, it is only within the last year or two that any improvements have been made in ore cars, to facilitate the discharge of their loads. There are now three different makes of rapid-dumping cars on the market in competition with each other, the Summers, the Racousky and the Clark. Of these the Clark car is the most recent invention, and it is claimed by its manufacturers to embody the good features of the other two makes and several distinctive advantages that the others do not possess.

The Clark car is the only car that dumps with both air power or by hand, as desired. The Racousky car dumps by air pumps only, while the Summers cars are equipped to dump with either air power or by hand, as ordered.

There are several advantages claimed for the Clark car. Its sides are much steeper than those of cars now in use, having a slope of 60 degrees, instead of 45. The hopper opening at the bottom contains forty-eight and a half square feet, which is about twice the size of the opening in the cars now used. Another distinctive feature of the Clark car is the method of opening the bottom, by which the sides of the car are jarred, thus shaking down ore which might adhere to the car. The car has a capacity of 50 tons.

Mr. Clark states that he was highly pleased with the showing made by the car in Duluth and expects it to do as well here. However, there is a blue mud-like ore shipped from Marquette which is shipped from no other port, and only experiments can tell how the car will handle it, as it is considered a troublesome ore to dump.

Contracts for Ashtabula Dock.

The New York Central Railway Company has announced contracts, calling

for an expenditure of \$1,300,000 that have been let for equipping the new dock at Ashtabula, O. where the railroad company handles the transportation of ore. The dock was recently completed at a cost of \$2,000,000.

The contracts call for ore-handling machines of the most modern type and foundations for such machinery. It is expected the dock and machinery will be ready for use by August 1, 1910.

Steel Ties for Mines.

A shipment of steel ties has been bought from the Carnegie Steel Company by the Great Lakes Coal Company, of Kaylor, Pa., for use in the mines of the company at that place. The ties which will be used in the Kaylor mines are the first of the steel ties to be used by mines in this district, and are of considerably different style than used on railroads, being flat with the upper edge turned to keep the ties from sliding forward. The tie fasteners are also different than used on the railroads, as the fasteners are riveted on the tie, instead of being fastened by bolts.

Fewer Idle Cars.

The fortnightly report of the American Railway Association on car shortages and surplusages, ending September 24, shows a decrease in surplusages of 31,778 cars, bringing the total surplus down to 78,798.

"The decrease is general in all classes and through all sections of the country," says the report, "although the greatest percentage of reduction is in the Eastern territory. In New England and the North Atlantic district the surplus has practically disappeared."

For Electric Freight Locomotive.

As a further step toward complete electrification, the New York, New Haven & Hartford Railroad awarded the Westinghouse Electric & Manufacturing Company a contract for an electric freight locomotive, of 1,400 horsepower. It is to be delivered late in October.

Investigate West Virginia Ore.

A press report from Keyser, W. Va., says: Concerning reports which have been current for some time of plans to build a railroad from the Chesapeake & Ohio railway to a connection with the Baltimore & Ohio railroad, it has been intimated that the project is that of a large steel concern, which has been investigating the iron ores of that section of the country during the past three years and has secured control of many acres of ore bearing territory, as well as right of way over considerable of the proposed route. A preliminary survey has been made and the actual location

work will begin this fall or early next spring. The line will be about 160 miles long from a point not yet mentioned on the Chesapeake & Ohio to Keyser, on the Baltimore & Ohio to Frankfort, Petersburg and Mayesville.

THE RAILROAD CLUB.

Pittsburgh Organization Nominates Officers for Coming Year.

About 100 members of the Railroad Club, of Pittsburgh, met at the Monongahela House Monday night and nominated officers as follows: L. J. Redding, president; F. R. McFeatters, first vice president; William Elmer, Jr., second vice president; L. H. Turner, F. H. Stark and George T. Barnsley, executive committee; D. C. Noble, Stephen C. Mason, C. E. Postlethwaite, A. B. Bellows, George E. Gies, finance committee; C. W. Alleman, secretary; J. D. McIlwain, treasurer. For most of the positions there is only one nominee. The next meeting, the annual one, will be held October 22 and the election will then take place.

"The Technical Selection of Railroad Oils as Applied to Cost Reduction," read by A. D. Smith, of Coraopolis, was the principal paper of the evening. His paper was followed by a general discussion of the subject. The question of maintaining a continuity of lubricating oils, which Mr. Smith thought was impossible on account of the crude supply of petroleum as a base, varying in properties, was answered by J. A. Whalen, of Franklin, Pa., who said:

"It is possible to maintain a continuity of lubricating properties of an oil. It has been done for the past 30 years, and such oils are now used with entire satisfaction in lubricating railroad equipment of 98 per cent of the railroads in this country. This oil is also used in England, France, Germany, Cuba and South America. This continuity can be made possible by practical tests and by laboratory investigations, and every shipment can be made uniform by using petroleum as a base, and other materials as compounds."

B. & O. Shop Work.

Specifications for \$150,000 of new equipment were sent out during the week by the Baltimore & Ohio Railroad Company for improvements at the Benwood shops, which will practically mean the rebuilding of the plant. The general contract was given to the Patrick Farrell Construction Company, of Cincinnati. The improvements include a 23-stall engine house, with turntable and pit 80 feet long; oil house 30x58 feet; storehouse 30x70 feet, with platform 20x30 feet; machine shop, blacksmith shop, boiler and engine room 60x184 feet, with

brick stack 125 feet high; sand house 22x94 feet, with tower 13x15 feet; material storage platform 25x100 feet; shaving shed 12x33 feet; casting storage platform 38x60 feet; pipe, bar and sheet metal storage racks, 20x30 feet; two scrap bins 42x20 and 70x20, respectively, and locomotive cleaning platform 19x75 feet.

There will also be installed a new system of water supply and fire protection and a complete sewer system. Work will be started at once and it is expected that the new shops will be completed by February 1, 1910. On account of the general use of all-steel freight cars, heavier machinery will be installed at the Benwood shops.

B. & O. to Buy Water.

The Baltimore & Ohio Railroad has about completed negotiations with the Cambria Steel Company, of Johnstown, for furnishing it with water. The drouth has been costly to the road. The Cambria Steel Company is building an immense dam near Johnstown and before long it is believed the section of the B. & O. between there and Pittsburgh will be supplied. At present the road gets its supply in Pittsburgh from the river, but this is very unsatisfactory. On the P. & W. for quite a distance the road has been hauling water for several weeks, and if the drouth continues it will also have to be done on the main line.

The Pennsylvania, on the contrary, since it has built the magnificent system of reservoirs along the mountains has no trouble whatever, and it even furnishes water to some of the main line towns.

Work on New Cut-Off.

The construction contract for 36 miles of railroad from Grand George to Middleburg, N. Y., to cost \$1,500,000, has been awarded to the Dominion Construction Company of Pittsburgh by the Delaware & Eastern Railway. The Delaware & Eastern traverses New York through the center from the Pennsylvania line on the south at Hancock, where it connects with the coal carrying roads, to Schenectady on the east, where connection is made with the Boston & Maine system.

A. L. Richmond, Jr., president of the Dominion Construction Company, said that equipment and forces would be transferred to the scene of action at once, and work would be started in 10 days.

St. Louis Belt Line.

The St. Louis County Belt Railroad Company, which was recently granted a franchise to build a \$2,000,000 railway in St. Louis county, has formally accepted the franchise. James D. Houseman, of

St. Louis, in whose name the franchise was secured, stated that work on the road would be started at once.

NEW ROUTE FOR TROLLEY.

Plans Filed for Extension from Monongahela to Washington, Pa.

A certificate of the secretary of the commonwealth, authorizing a branch or extension of the Pittsburgh, Monongahela & Washington Railways Company lines, was filed in the office of the recorder, of Washington county, Pa., last week. This extension does not provide for the running of the line of the company by way of Marianna, in constructing a road from Monongahela to Washington. It appears that the branch that will go by way of Mariana will eventually go on to Waynesburg.

The extension just filed for record was authorized by the stockholders at a meeting held on September 16. The following shows the proposed route of the line from Monongahela to Washington:

Beginning on Park avenue; thence continuing along Hoon street in Carroll township in a southwesterly direction over private property on the northside of Pigeon creek and the township road to a point near the Crescent Blasting Company; thence crossing the township road, Pigeon creek and the Ellsworth branch of the Pennsylvania road to the southside of Pigeon creek; thence along this creek to the dividing line between Carroll and Fallowfield townships; thence following Pigeon creek through this township to Bentleyville, near the Newkirk church; thence to Ellsworth, through Ellsworth to Somerset township, and still along Pigeon creek through Somerset township, in a westerly direction to a point near where the center branch of Pigeon creek flows into the south branch of Pigeon creek; thence northwesterly along the center branch of Pigeon creek to Vanceville; thence continuing northwesterly and along Opossum run to a point near the U. P. church, on the dividing line between Somerset and South Strabane townships; thence along South Strabane township and along a branch of Little Chartiers creek to Henry's Summit; thence to Vance station, across the B. & O. road, and continuing along the old narrow gauge route to the dividing line between South Strabane township and East Washington, and on into Washington by way of Murtland avenue.

This is a different route than was first proposed, when Marianna was included in the route to Washington, the proposed line to reach Washington through Lone Pine.

New Projects in Ohio.

The Youngstown & Northern Railroad was incorporated in Ohio, September 25, with a capital of \$10,000. James D. Kennedy, C. A. and L. A. Manchester, Dudley R. Kennedy and W. R. Graham, all of Youngstown, were named as the incorporators. The railroad is to run from Weathersfield township, Trumbull coun-

ty, into Youngstown. Niles is located a short distance from Youngstown, and it is believed that the new road is an independent traction venture.

The Ohio River & Northern, a company incorporated in Ohio, to build a steam road from the Pennsylvania line to the West Point coal fields via East Liverpool, has been started. It was originally planned and formed by J. L. Francies, of, Chicago, and Percifer F. Smith, of Pittsburgh, formerly of the American Sheet & Tin Plate Company. Quite a number of men were put to work near the Pennsylvania State line during the week, doing the first grading.

HARRIMAN LINE EXTENSIONS.

Kruttchnitt Reviews Vast Improvements Under Way.

The more important extensions of the Union Pacific and Southern Pacific which have been decided upon, when completed will add 2,005 miles of line to these systems, and will have cost \$100,000,000.

This is the programme of enlargement outlined in a brief statement by Julius

Kruttchnitt, director of maintenance and operation. Summarized, the improvements are:

Union Pacific—600 miles of extension and 100 miles of double track.

Oregon Short Line—199 miles of extensions nearing completion; 50 miles additional to be begun.

Oregon Navigation Company—280 miles being graded and under construction.

Northern Pacific—100 miles double track under way; one tunnel at Tacoma, 8,700 feet long under way; one 5,500 feet long at East Portland begun. New station at Seattle, with terminals, to cost \$500,000.

Southern Pacific—Extensions under way total over 400 miles. Of this 173 miles are being added to the Oregon lines. In California the grade of the Central Pacific is being reduced nearly 1 per cent at certain points; new branch lines aggregating 179 miles are under construction. A low grade line is under way, closing the gap between Winkelman and San Carlos, Arizona, about 30 miles. The Southern Pacific will then

have a line between Bowie on the main line in the southeastern part of the State, to Phoenix, whence the Santa Fe has built to Parker on the Colorado River, at the California boundary.

In addition to the 263 miles of the Sonora, in Mexico, which is leased by the Southern Pacific, the Southern Pacific, of Mexico, is building 830 miles of line south from the Sonora terminus at Emplame, parallel to the coast, to Orendain, near Guadalajara, where it will connect with the rails of the Mexican Central. About 200 miles of the 830 mentioned are still to be built, as well as 100 miles of branch line running northward from Corral to extensive coal deposits in the vicinity of Tonichi.

Half of the total amount of \$100,000,000 to be expended on these improvements and extensions has been paid out and the total represents the greatest outlay of any American road for the same purpose. With the surplus accumulated there is a further working capital of \$55,000,000 available. The remaining cost of new construction will not have to be met for another year.

Corporations to Which Charters Have Been Granted Recently

PENNSYLVANIA.

Kenneth Coal Company. \$5,000. Treasurer: Ira W. Logan, Rochester, Pa. Directors: Edward J. Allison, David A. Nelson, Beaver, Pa.; Ira W. Logan, Rochester, Pa.; Harry W. Reeves, Beaver Falls, Pa.; Fred L. Kahle, Pittsburgh.

Lehigh Clutch Company. \$25,000. Treasurer: R. O. Kohler, Catasauqua, Pa. Directors: Haakon E. Norbom, Philadelphia; Frederick Conlin, Bethlehem, Pa.; R. O. Kohler, Catasauqua, Pa.

Franklin Coke Company. \$50,000. Treasurer: Paul Mauzy, Connellsville, Pa. Directors: James S. Braddock, Walter M. Shepard, Mt. Pleasant, Pa.; George W. Wilson, Pittsburgh; Paul Mauzy, Connellsville, Pa.; Christian Echard, O. E. Hibbs, Frank Dey, W. J. Dickson, Joseph M. Bates, all of Uniontown, Pa.

Pittsburgh Cap Pistol Company. \$10,000. Treasurer: John C. Knode, Muncie, Pa. Directors: William R. Atkinson, Homestead, Pa.; Rees James, Joseph D. Kilgore, John C. Knode, all of Muncie, Pa.

Asylum Water Power Company. \$5,000. Treasurer: George B. Cornell, 67 Montclair avenue, Montclair, N. J. Directors: George B. Cornell, Montclair, N. J.; Mial E. Lilley, U. M. Fell, Towanda, Pa.; George C. Patton, New York; Bruce S. Lachlan, Plainfield, N. J. Same incorporators for Borough Water Power Company, North Towanda Water Power Company, Sheshequin Water Power Company, Towanda Water Power Company, Ulster Water Power Company, Wysox Water Power Company.

Standard Ventilator Company. \$5,000. Treasurer: Philip B. Linn, Lewisburg,

Pa. Directors: John W. Meixell, Philip B. Linn, John M. Cromley, all of Lewisburg, Pa.

Intercourse Electric Light, Heat & Power Company. \$6,000. Treasurer: Ezra Zimmerman, Intercourse, Pa. Directors: E. K. Denlinger, Willis L. Zimmerman, Ezra Zimmerman, all of Intercourse, Pa.

These increases in capital stock were granted:

Gates Coal & Coke Company, Allegheny, from \$10,000 to \$400,000.

Scranton Electric Company, from \$3,000,000 to \$7,000,000.

Victor Iron Company, Waynesboro, \$15,000 to \$100,000.

Allegheny River Mining Company, Pittsburgh, \$500,000 to \$5,000,000.

Bolivar Lock Company, Bolivar, \$1,000 to \$50,000.

Standard Gas & Electric Power Company, of Philadelphia, \$500,000 to \$600,000.

Alumina Shale Brick Company, Bradford, \$50,000 to \$100,000.

Cresson Water Company, Johnstown, \$10,000 to \$100,000.

NEW YORK.

Fleiss Equipment Company, Brooklyn; manufacture airships, aeroplanes, balloons, etc.; \$100,000. Charles F. Muller, No. 27 Willoughby street, Brooklyn; W. D. Woodward, No. 500 Sixth street, Brooklyn; George Bender, No. 133 Washington Market, New York; John P. Muller, Lake Hopatcong, N. J.

Eureka Cylinder Company, New York; iron foundry. \$50,000. Harry Wolfe, No. 402 Fifty-sixth street; Frank C.

Dohrmann, No. 220 Prospect avenue; Winston M. White, No. 402 Fifty-sixth street; all of Brooklyn.

The Croxton-Keenton Motor Company, No. 1662 Broadway, New York; manufacturing automobiles and locomobiles. \$60,000. H. A. Croxton, Massillon, Ohio; Jacob P. Stoltz, No. 1662 Broadway, New York; Walter D. Grand, East Orange, N. J.

Rochester Natural Gas Company, Buffalo. \$500,000. Arthur E. Clark, of Batavia, Frank B. Barnard, Edward C. Kooster, of Buffalo.

OHIO.

Dodd Manufacturing Company, Lorain; carpet sweeper; C. H. Buttendwender, W. H. Thompson, R. T. Reedy, E. M. Rice, R. H. Sprague. \$300,000.

Mansfield Steel Wire Works Company, Mansfield; M. A. Blackburn, A. Kallmeter, Huntington Brown, Arthur Hughes, Peter A. Biddinger. \$10,000.

Buckeye Gas & Electric Fixture Company, Elyria; I. M. Gibbons, Milo M. Warner. \$10,000.

WEST VIRGINIA.

Meadow River Colliery Company, of Fayetteville, to operate in Nicholas county. \$25,000. W. H. Ramsey, of Ramsey; J. H. Gaines, of Charleston; B. E. Bare, C. L. Phipps, E. G. Pierson, of Fayetteville.

Turner Adjustable Double Deck Car Company, of Chicago. \$250,000. A. L. Ballas, William H. Grunder, John H. Miller, H. B. Fiske and Harry C. Turner, of Chicago.

Petrie Auto Company, St. Louis; \$10,000. C. J. Petrie, T. D. Petrie, T. M. Curlee and others.

A Combined Squaring Gear and Multiple Punch.

Bertsch & Company's machine works, at Cambridge City, Ind., is turning out a new patented combined squaring shear and multiple punch, which is built in all sizes from 3 to 12 feet in length. The machine is adjustable for all thicknesses of plates, and is built with the company's patented centerbearing. Its vertical rods serve as a hold-down when the machine is used as a plain shear, and as a stripper when it is used as a combined shear and multiple punch. The number and location of these rods depends entirely upon the character of the work to be done on the machine. They are actuated by a bar in the rear of the punch-cross-head. For some kinds of work, a solid bar, the full length of the machine, is fastened to the ends of these rods.

Figure 1, on this page, shows the squaring gear and multiple punch with the punch-cross-head in position for punching a series of holes simultaneously with the shearing stroke of the shear-cross-head. It trims or slits and punches a series of holes in one operation. The distance from the center of the punches to the cutting edge of the blade varies from one-half inch to five inches, according to specifications.

The punches have either independent or universal adjustment; for universal adjustment they are set in an adjustable, dove-tailed, steel punch-holder-bar,

so that the entire lot can be removed or replaced, together.

When engaged, the punch-cross-head is securely locked and has a square-shoulder-fit along the entire length of the

shear-cross-head, against which all of the stress results, thus relieving the hinge pins of strain; also it has end bearings.

The second cut, Figure 2, shows the machine with the punch-cross-head dis-

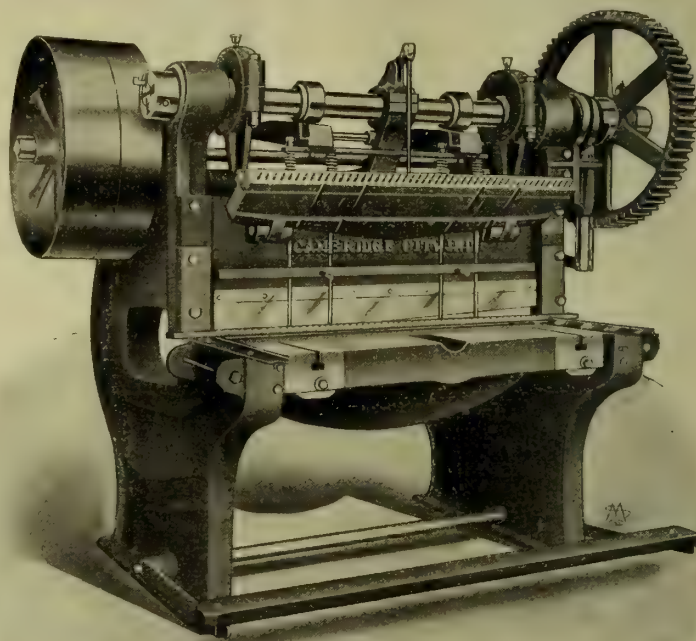


Figure 2—Shear and Punch With Punch-Cross-Head Disengaged, Making It a Regular Gap Shear.

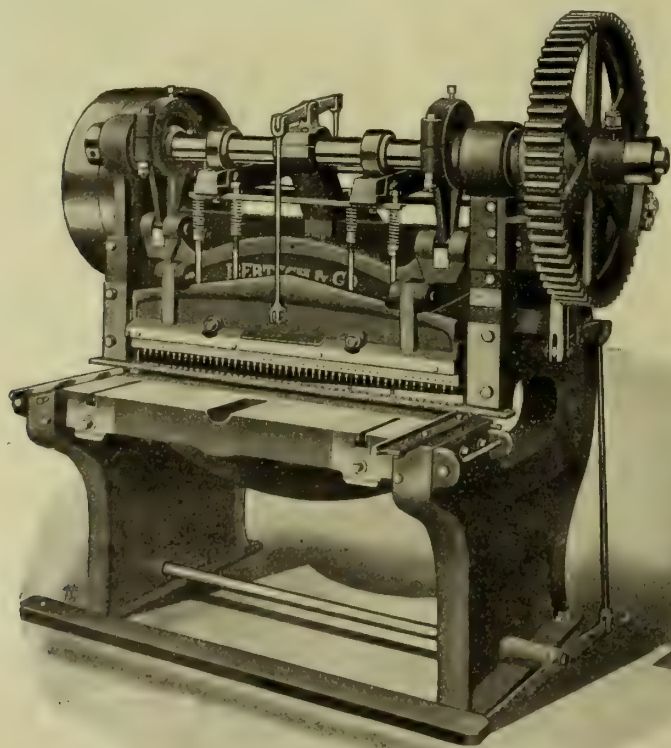


Figure 1—Patented Combined Squaring Shear and Multiple Punch in Position For Punching a Series of Holes, Simultaneously With the Action of the Shear.

engaged, thus converting it to a regular gap shear. The punch-cross-head is counter-balanced so that it is easily raised and lowered. It is only necessary to handle two stud nuts when disengaging or engaging the punch-cross-head.

By removing the top blade the machine can be used as a regular multiple punch, and a series of holes can be punched along any line in the sheet.

The shear-cross-head has an end bearing against an adjustable brass gib.

The makers of the machine guarantee the clutch to be reliable, positive, noiseless and easily operated. It has steel faced jaws, and a cast steel switch ring acting against a hardened steel roller on a verticle steel plunger. The main shaft bearings are adjustable split boxes. When and straightening rolls, in any size up specified, these shears are built with front and rear brackets and gauges, and drop leaf tables.

Bertsch & Company also manufacture a complete line of shears, punches, angle iron bending rolls, and plate bending to 100 tons in weight. The company has devoted its entire attention for over 25 years to this particular class of tools. Neatly illustrated folders, recently issued by the company, call attention to the multiple punch and shear.

BUSINESS TROUBLES.

New York — Creditors with claims of \$1,191, filed petition in bankruptcy against the Engineering Specialty Company, manufacturers of electric motors, of No. 81 Nassau street. It was alleged that the company is insolvent and has transferred a portion of its property pany in a New York corporation, in-pany is a new York corporation, in-corporated in December, 1905, with capital stock of \$100,000, and is said to have a factory at Stamford, Conn.; on which a mortgage of \$29,500 was given in September, 1908.

St. Louis — Eugene H. Abadie, president of the E. H. Abadie Company, mechanical engineers here, and interested with G. W. Hengst and Thomas Evans, of Cincinnati, in the Laurel Engineering & Constructing Company, of that city, filed a petition in bankruptcy. He lists his liabilities at \$71,150 and assets at \$60,431. His liabilities include notes of the Laurel Company, amounting to \$12,000, on which he was the third indorser.

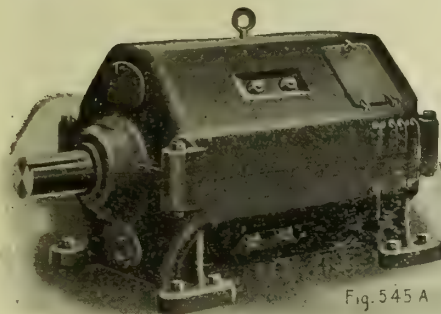
To Build Autos and Air Craft.

At Albany, N. Y., the Auto & Aeronautic Supply Company, of New York city, with a capital of \$20,000, has taken out a charter to manufacture automobiles, balloons and flying machines. The directors are Percy A. Larter and Glenn Etheridge, of New York city, and Harry Chandler, of Westbury, L. I.

Consular reports tell that, at a recent meeting of an English clay-working company, owning a branch establishment at Huddersfield and manufacturing products for use in the building trades, such as bricks, "pipings," baths, and other sanitary supplies, it was declared that the only branch which gave satisfactory results was furnace linings and similar articles for the iron and steel trades.

Try a Want or For Sale ad in the Industrial World.

The Steel industry is full of Crocker-Wheeler Form W Motors



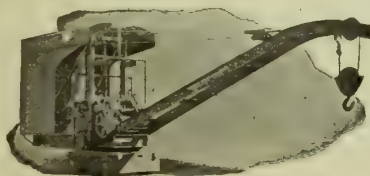
which are fully described in Bulletin 85-H.

It was built on the specifications of a score of the leading steel engineers, by a company that has specialized in motor-drive since 1888. The W motor has become the standard among mill men.

Form W Motor, 7 1/2 to 200 H. P.

CROCKER-WHEELER COMPANY

PITTSBURG, CLEVELAND, BIRMINGHAM, AMPERE, N. J., Etc.



TRAVELING,
LOCOMOTIVE,
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and Special Designs.

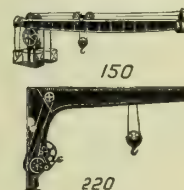
NORTHERN CRANES

and HOISTS

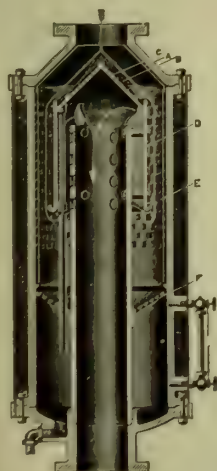
NORTHERN ENGINEERING WORKS, DETROIT, MICH.

Pittsburgh Office, Machesney Building.

Philadelphia Office, Land Title Building.



All Types.
Capacities
and Sizes.
Catalog?



Sweet's Steam Separators Surely Separate.

Deliver Steam 99 8/10 Dry. Remove 99 per cent of the Oil.

Sweet Separators are Receiver Separators with ample room for separation, steam storage and lots of water. They purify and dry the steam then store it above and independent of the water chamber. Water chamber is at the bottom and large. Thousands in use—many of them sold on repeat orders.

Sweet Separators keep Heating Systems, Boilers, Condensers, etc., free from oil and the expensive results that follow the use of oil-laden steam. They deliver exhaust steam pure and ready for use in Laundries, Dye Houses, Ice Plants, etc. Made in all styles and sizes from 50 to 24,000 lbs in weight. Get the Catalog.

DIRECT SEPARATOR COMPANY,

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Wanted, For Sale, Bargains, Etc., in Brief.

POSITIONS WANTED.

Wanted—Situation in Open Hearth Department. Superintendent or Foreman. A man with successful experience and ability to produce best results, is open for engagement. Has thorough practical knowledge. For further particulars, address John Givens, P. O. Box 1386, Pittsburgh, Pa.

Drawings—Structural and mechanical designs and details. Moderate prices. Address Box 126 Industrial World.

Foundry Foremen and Others wanted to increase their earning capacity 25 to 50 per cent, by taking a course in the mixing of irons with the Milwaukee Correspondence Schools, Goldsmith Bldg., Milwaukee, Wis.

A Position as Manager or Superintendent; age 29; a graduate Massachusetts Institute of Technology; at present in charge of a boiler plant with an annual output of nearly 100,000,000 K. W. H.; reasons for desiring a change; 12 hours per day, 365 per year. Address Box 4, Darlington, Mo.

WANTED.

Situation—An experienced accountant, correspondent and general office man, accustomed to handling men and accounts, desires position where energy and attention to details will merit recognition. Address Postoffice Box 194, Northside, Pittsburgh.

Wanted—Attention, manufacturers. An old-established rolling mill, whose output is high grade bar iron, and black and galvanized sheets, and having ample ground in Pittsburgh district, would be interested in having located on their ground manufacturing adjuncts that use above materials. Parties engaged in manufacture of trade articles from above materials, who contemplate change of location, or engaging in new enterprises, can address office of the Industrial World, Pittsburgh, Pa., giving full particulars as to tonnage used; space desired, etc.

Wanted — A second-hand 15 or 16 h. p. stationary gas engine. Address Norwood Machine Company, Cincinnati, O.

Wanted — Manufacturers wanted to build cold rolled shafting machinery on royalty basis, under United States patent No. 895,364, dated August 4, 1908, described in the Industrial World December 28, 1908. Address John S. Griffin, Roslyn, Washington.

SEALED PROPOSALS.

Machines for Tabulating Agricultural Statistics. — The Director of the Census is considering various types of machines with a view to determining the one best adapted for tabulating the agricultural

statistics of the Thirteenth Census. Any one possessing a machine adapted for this purpose is invited to present the same for test in practical operation at the Bureau of the Census, Washington, D. C., on or before July 31, 1909. For further information address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

Sealed Proposals will be received at the office of the Director of the Census, Washington, D. C., until 2 o'clock p. m., August 9, 1909, and then publicly opened, for furnishing all the labor, materials, and work necessary for the construction in lots of 60, 75, 100, or 125 tabulating machines and delivering the same complete, free of all charges for transportation, at the Census Building, Washington, D. C. right is reserved to accept or reject all bids in whole or part, to strike out any item or items in the specifications, and to waive any defects. For specifications, blueprint drawings, blank proposals, and full information, address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

FACTORIES WANTED.

Factories Wanted — Grafton, W. Va., will give to manufacturers, a free site on railroad siding, with shipping facilities in all directions, five-cent gas, and an inexhaustible supply of soft water and coal. For information, address Secretary, Grafton Board of Trade.

MANUFACTURING SITES.

Manufacturing Sites — Free, on railroad and Ohio river and street car line; cheap gas; cash bonus given to good mills, factories and shops. Special facilities for sheet and tin mills. Address Paden City Land Company, 45 South Twentieth street, Pittsburgh, Pa.

FOR SALE.

For Sale—Several power generators with their engines and switchboards, lighting generators, hoisting engines, mine wagons, air compressors, feed water heater, steel head frames and bins. All this apparatus brand new at manufacturers' shops. Owing to contracts for this equipment being placed 18 months ago, can sell same at lower prices than it can be purchased for today and can also give immediate delivery. Address Box 200, Industrial World, Pittsburgh, Pa.

BLOWING ENGINE FOR SALE.

Horizontal Blowing Engine, long cross-head type. Floor space 7 feet 6 inches by 24 feet. Two balance wheels, 10 feet 1 inch in diameter. Six arms, sec. of rim 8½ inches by 9½ inches. Each wheel cast whole. Bed piece heavy box type, cast in two pieces, joint made with bolts and heavy shrink links. Steam cylinder, diameter 24 inches, stroke 42 inches, balance slide-valve, Porter-Allen type, diameter steam pipe six inches, ex-

haust 7 inches, diameter of piston rod 3¾ inches. Air cylinder, diameter 48 inches, stroke 42 inches, discharge pipe, 14 inches, diameter of piston rod 4 inches, diameter of crank shaft 9½ inches. This engine has been little used and is in good order and condition. Apply to Tremont Nail Company, West Wareham, Mass.

For Sale—Steam engine. Wetherill Corliss, R. H., 22x48, 250 H. P., first-class condition, cost \$3,300, will sell for less than half price, a bargain. Keppel & Company, Chester, Pa.

For Sale — One second-hand 8x9" Chuse engine, direct connected to 15 k. w. Triumph generator; good condition. Electric Machinery & Specialty Company, 204 Franklin avenue, St. Louis, Mo.

For Sale—Rock Drill—Ingersoll make; motor, 1 h. p., complete; shafting, pulleys, hangers, belting, lathes, 1 drill press, cheap; boilers, engines, pumps. William H. Flynn Machinery Company, 404 East Second street, Cincinnati, O.

For Sale—One-fifth interest in an up-to-date manufacturing plant, building a line of special and patented machinery, and having a very extensive jobbing trade. Purchaser can secure a salaried position as engineer, chief draftsman, or salesman. Price of one-fifth interest \$10,000. Address Box 154, care Industrial World, Pittsburgh, Pa.

Machinery Bought, Sold and Repaired—Engines and boilers, all styles and sizes, both new and second-hand; machinery of every description for all purposes; also pulverizer and crushers. Write to me for anything you want. Gruendler Machine Company, 928 Main street, St. Louis, Mo.

For Sale—One 18x24" slide valve engine 2 66"x18" tubular boilers, 1 heater, 1 deep-well pump and 5 wood working machines; will overhaul and put in first-class condition, cheap; also, several direct current motors, 3, 5, 10 and 15 h. p., 220 volts. The Farrin-Korn Lumber Company, Winton Place Station, Cincinnati, O.

IRON ORE LANDS.

For Sale—10,000 acres in tracts, fine ore lands in Virginia and Tennessee. Fine location for transportation. Abundant limestone, water, coking coal, nearby and on the properties. Low price. For particulars write, in care Box 210, Industrial World.

ARE YOU THINKING OF ESTABLISHING

a new manufacturing or mercantile business?—or enlarging your present equipment?—We will incorporate your business under the laws of any State, and prepare your prospectus and advertising matter. Expense moderate. Write for Book A.

ARGUS,
409-410 Machesney Building
PITTSBURGH, PA.

PAINTS FOR PROTECTION OF IRON AND STEEL.

By Ernest F. Burchard.*

According to Cushman† the corrosion of iron, like that of other metals, is an electrochemical phenomenon. The application of paint coating constitutes the most general method for the preservation of iron and steel, and, along this line, the electrochemical theory finds important application. A large amount of research work has already been done on this subject by Cushman and others in determining the effect which all well-known pigments have on steel, and it has been concluded that certain pigments were unsafe in a paint designed for the protection of steel. Such pigments have been classified as "stimulators" of corrosion. Other pigments have indicated possible properties of protecting steel from corrosion and are termed "inhibitors." Still other pigments were found neither to stimulate nor to inhibit corrosion to any marked degree, and these were classified as "indeterminates." The effect of certain impurities in pigments often determines in what class the pigments shall be placed. The effect of certain impurities in steel likewise may influence its tendency to corrode, and the position of these impurities in steel may localize the corrosion. Two years ago Cushman‡ suggested that, owing to their inhibitive action against rusting, the slightly soluble chromates should be theoretically the best protectors to be used in the first coat to be applied to iron and steel surfaces. A long series of tests followed, undertaken by five separate investigators,§ and "from these results a tentative classification of the pigments was made under the headings: (1) Inhibitors, (2) indeterminates, and (3) stimulators. No one of the 50 pigments tested was, however, admitted to any class except in the cases in which a majority of the investigators reached the same result." For details of the investigation and the consequent classification the reader is referred to the pamphlet by Dr. Cushman: "The Preservation of Iron and Steel."†

* Advance chapter from Mineral Resources of the United States calendar year, 1908, United States Geological Survey.

† Cushman, Allerton S., the preservation of iron and steel: Bulletin United States Department Agriculture, Office of Public Roads, No. 35, May 21, 1909, p. 8.

‡ Cushman, Allerton S., the corrosion of iron: Proclamation American Society Testing Materials, volume 7, 1907, pp. 211-228.

§ Cushman, Allerton S., the inhibitive power of certain pigments on the corrosion of iron and steel. Proclamation American Society Testing Materials, volume 8, 1908, pp. 6051610.

NEW YORK PITTSBURGH CHICAGO
OTIS ELEVATOR COMPANY
 ELECTRIC AND STEAM
AUTOMATIC
Hoisting and Reversing Engines
 NEW AND REFITTED. Full Description on Request

SECOND HAND CRANES

40' span Morgan electric, cap. 20 ton, one trolley.

3, 5, and 10 ton jib cranes.

One 50 ton Bucyrus steam shovel, standard gauge.

Hayward orange peel bucket, 1 1/2 yards.

Champion rock crusher and elevator.

WICKES BROTHERS

45th Street and A. V. R. R.,
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I BUY—NEW & USED MACHINERY—I SELL

1—24 x 60 St. Louis Corlies Engine and 500 K.W. 550 Volt Railway Generator.
 1—60 H.P. Foos Gas Engine.
 1—45 K.W. Westinghouse 125 Volt, D. C. Generator. \$350.00
 1—1300 lb. Bement Miles Single Frame Steam Hammer, A1. \$950.00
 1—6 H.P. Fairbanks Gas Engine \$125.00

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FOR SALE

Second Hand Machinery

2—100 H. P. Otto Gas Engines.
 1—100 H. P. Mertes Gas Engine.
 1—13" x 16" Vertical Steam Engine.
 1—16" x 18" " " "
 1—12" x 15 Horizontal " " "
 1—14 x 16 " " "
 1—14 x 15 " " "
 1—15 1/2" x 15" " " "
 1—5 ton 6 Wheel Saddle Tank Switching Locomotive
 All in good condition.

Oliver Iron & Steel Co.,
 PITTSBURGH, PA.

Geo. A. Koehler, J. Foster McCune, Meyer Streng,
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KOEHLER & STRENG CO.
 IRON AND STEEL SCRAP
 2830 Liberty Avenue, Pittsburgh, Pa.

TEST MACHINE FOR SALE

One Riehle 50,000 pound tensile Test Machine, in first-class order, equipped with electric poise and autographic device.

THE VANADIUM SALES COMPANY OF AMERICA
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PATENTS
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 1522 PARK BUILDING, Pittsburgh Pa

These laboratory results, however, have been considered only as a step to further and more practical studies and, accordingly, 600 large plates,† representing three different kinds of steel were mounted in wooden frames facing the seashore near Atlantic City, N. J. These plates were painted under the strictest test conditions with single paints, as well as with formulas made up from the three tentative classes of pigments. The following organizations co-operated to a greater or less extent in this work: United States Department of Agriculture, American Society for Testing Materials, Paint Manufacturers' Association of the United States, Master Painters' Association of Pennsylvania, Carnegie Steel Company, and American Rolling Mill Company. The test plates were completed and exposed in September, 1908, and they are being inspected from time to time, and at the inspection incident to the meeting of the American Society for Testing Materials on June 30, 1909, certain results were already evident. It is believed that the ultimate results will be of much value to the metallurgist, to the engineer, and to all persons interested in paint technology.

Simultaneously in Pittsburgh there was erected on the ground of the Carnegie Technical School a test fence, consisting of various grades of galvanized steel wire and woven wire panels. These wire fences have been painted in part with special inhibitive paints and have in part been left unprotected. The comparative tests should in time yield results of great value.

Experimental tests on various types of roofing and sheathing metals was undertaken in the spring of 1909 by the United States Geological Survey at its structural materials laboratory on Young's Pier, at Atlantic City, N. J. Here a number of plates representing three grades of material, Bessemer steel, basic open hearth steel, and pure iron, including flat and corrugated siding and flat and corrugated roofing, each as plain black metal, as galvanized metal, and as tinned metal. The galvanizing was done by several processes, including the Sherardizing process. These plates have been mounted in an exposed position, and the black metal plates have been coated with red and green paints containing rust inhibitors in the pigment and in the vehicle.

Another well-known service test of

† Cushman, Allerton S., the preservation of iron and steel: Bulletin United States Department of Agriculture, Office of Public Roads, No. 35, May 21, 1909, pp. 23-34.

‡ For details on the construction of these steel test fences, see Bulletin No. 7 of the scientific section of the Paint Manufacturers' Association of the United States.

GALVANIZED SHEETS
CORRUGATED ROOFING, GALVANIZED OR PAINTED,
BLACK STEEL SHEETS.
McCULLOUGH IRON CO.,
MANUFACTURERS. WILMINGTON, DEL.

LADLES

AND ALL CLASSES OF

Steel Plate Work

MANUFACTURED BY

**THE PETROLEUM
 IRON WORKS CO.,
 SHARON, PA.**

BRANCH OFFICES-

50 Church St., New York City, N. Y.
 Farmers Bank Bldg., Pittsburgh, Pa.
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 Brown Marx Bldg., Birmingham, Ala.
 Tulsa, Okl.



THE MOST PRACTICAL ROOF

is by all odds a tin roof—and if a tin roof, then it should be made of



32 POUNDS COATING

ROOFING TIN

"The Terne which turns the elements"

While many roofings with their various claims of superiority have come and gone, a good terne plate is yet acknowledged the best and most practical roofing material obtainable—Weatherproof, fireproof, neat in appearance, easily applied, light, and most important of all—durable.

**AMERICAN
 SHEET AND TIN PLATE
 COMPANY.**

Frick Building,

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pigments for the protection of structural steel has been in progress for the last two and one-half years on the Pennsylvania Railroad bridge over the Susquehanna river at Havre de Grace, Md. The application of the paint and the subsequent observations have been under the auspices of the American Society for Testing Materials, and reports have been published by that society in its proceedings for 1908 and 1909.

Although it is too early to give conclusive data as to the results of these various actual practical tests, yet if the autoelectrolytic theory of the cause of corrosion be applied to the subject of protection by paint films, it would, in general, appear that pigments that are good conductors of electricity should not be applied directly to the surface of iron and steel. Specific reasons for this appear in Cushman's bulletin,[†] and also descriptions of other experiments which indicate that some pigments which have been supposed to be excellent for protecting steel should not, in reality, be used for the prime coat, and that some pigments which, theoretically, should inhibit corrosion act apparently as a stimulus. This fact seems to depend on the technology of their manufacture and whether or not impurities are present. Cushman, therefore, advances the following conclusions: (1) The name of the type of pigment does not necessarily guarantee its inhibitive value; (2) pigments that are good conductors should not be applied as the prime or contact coating to iron and steel; and (3) if pigments contain material which is, even in the slightest degree, soluble in water, they should not be used unless their inhibitive effect on corrosion has first been established by tests.

Minerals in Alsace-Lorraine.

The total mineral production of Alsace-Lorraine has increased from 1,000,000 tons, valued at \$1,190,000, in 1872, when it became a part of the German empire, to 15,500,000 tons, valued at \$16,660,000, in 1908. The output of coal and iron ore in 1908 is given as follows: Coal, 2,367,742 tons, valued at \$6,880,818; iron ore, 13,281,589 tons, valued at \$9,190,608. As compared with 1907, the output of coal shows an increase of 173,500 tons, valued at \$880,600, while the output of iron ore shows a decrease of 826,000 tons, valued at \$1,309,000. The decrease in production of iron ore is reflected in the decreased output of furnaces, Thomas raw iron being \$5,236,000 less than in 1907, although the production of foundry iron increased from 340,000 tons in 1907 to 403,000 tons in 1908.

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HIGH - TENSILE STEEL FOR STRUCTURAL PURPOSES.

[From an Editorial in London "Engineering."]

Last autumn Professor Waddell contributed to the Proceedings of the American Society of Civil Engineers a paper advocating the use in bridges of nickel steel having a tensile strength of 47 to 54 tons per square inch. He showed in this paper that, at the prices which might be anticipated in the States, the use of this material would be economical even in spans of some 35 feet or so; while in large spans the saving in cost was such that a span of 1,800 feet could be built, using nickel steel, at the same price per foot runs as a 1,600-foot span in ordinary structural steel. Commenting on this paper we suggested that in Europe, at any rate, nickel steel might find a serious rival for such purposes in ordinary high-tensile carbon steels, which have already been very successfully adopted in warships of various types, and to a more limited extent in mercantile vessels. An important step in this direction was taken by Messrs. Yarrow in 1894 with the Russian torpedo-boat Sokol, the steel used having a tensile strength ranging from 37 to 44 tons per square inch, with an extension of 15 per cent on 8-inch when 3-16-inch thick. This steel was used in substitution for ordinary mild steel having a breaking strength of 26 to 30 tons, and elongation of 20 per cent in 8-inch. The saving in weight was such as to give the boat in question an additional knot on the measured mile. Since that date the Admiralty have definitely adopted high-tensile steel, not only for the plates of torpedo-boat destroyers, but also for the rivets, the advantage gained by the abolition of soft steel or iron for the latter purpose being proportionately even more than it is for the plating proper. An important point in this connection is that the high-tensile steel is used to resist the severe buckling strains which, under certain conditions, arise in the decks and superstructure of the boats. Some engineers, on the other hand, have held that to take compressive and crippling stresses high-tensile steel has no advantage over its cheaper and softer rival. For very long and flexible members this view is probably sound, since there is every reason to believe that the strength of these is represented with fair accuracy by Euler's well-known formula, into which enters neither the elastic limit nor the ultimate strength of the metal, but the elastic modulus only.

Compression members in actual bridges are not, however, very slender, and actual test shows conclusively that if built of the same scantlings, that constructed of the harder metal is very substantially

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FRICK BUILDING ANNEX

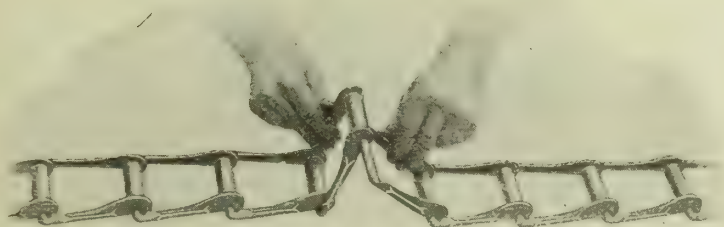
PITTSBURGH, PA.

the stronger of the two, pretty nearly in the ratio of the respective ultimate strengths. Nevertheless, since the stiffness of a member decreases more rapidly than does its thickness, it would not be safe to design a hard-steel strut to carry a given load by simply reducing the scantlings which would be used in the case of a mild-steel strut in the inverse proportion of the strength of the two metals. It follows, therefore, that a saving in the weight of struts is not so easily effected on these lines as it is in the case of tension members, though something more might no doubt be accomplished than would otherwise be possible by using the high-tensile steel in the shape of thin plates, stiffened by rolling ribs on them, as is now done for another purpose, with the steel to be used for Serrv tubes. Such methods are, however, at present hardly within the range of practical mechanical politics, especially as regards the qualities of high-tensile steels now being utilized in ship construction, which have an ultimate strength of from about 36 to 38 tons only. With the very expensive and strong metal proposed by Mr. Waddell, having a strength of over 50 tons per square inch, the gain by such a procedure, suggested by A. E. Seaton, would be more considerable, and might, perhaps ultimately prove profitable in structures of very exceptional span.

It still remains questionable, however, whether nickel steel will be able to compete successfully in this regard with some of the carbon steels now being manufactured. This point was raised in "Le Genie Civil," by A. Jacobson shortly after the publication of Mr. Waddell's paper, and in a recent issue of "Le Genie Civil," the latter gentleman re-discusses the subject in the light of data as to these newer steels furnished him by the French manufacturers. In America Professor Waddell anticipated being able to obtain $3\frac{1}{2}$ per cent nickel steel at a cost of about £6 15s per ton more than carbon steel. In France Mr. Jacobson states that with ordinary structural steel at £6 16s per ton satisfactory 3 per cent nickel steel will cost £16 per ton. This great increase arises because the mere addition of nickel to the common structural steels manufactured mostly in the Lorraine district produces a somewhat brittle metal, less resistant to the notched-bar test than common steel. Professor Waddell's nickel-steel specimens, it will be remembered, also showed up badly in this respect, though nickel steels made with really pure and carefully manufactured constituents show really remarkable endurance under this test. In place, therefore, of admitting the use of inferior nickel steel Mr. Jacobson proposes to employ very pure carbon steels, refined

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electrically. These, he stated, can be obtained at a cost of about £10 per ton, with an ultimate strength of 38 tons per square inch, and an elastic limit of from 22 to 25 tons per square inch, and they are very resistant under the notched bar test. M. Girot, in a communication to "Le Genie Civil," places the elastic limit of this steel some what higher—viz., 25 to 28½ tons per square inch, and gives its resistance in the notched-bar test as 20 to 25 kilogramme-meters per square centimetre, a figure quite equal to that obtained with a really good 27 to 28 ton steel. These electrically-refined high-tensile steels, M. Girot continues, can be produced with absolute regularity and at a very reasonable price.

M. Girot further suggests that if still greater savings are to be effected in weight, it will be better to use the nickel-chrome steels rather than steels containing nickel only, since the elastic limit of the former lies closer to the ultimate strength. This suggestion raises, however, the question as to whether such steels will prove as safe in structures as those having a large reserve of plasticity after the passing of the elastic limit. Tempering spring steels have precisely the characteristic mentioned by M. Girot, the elastic limit being almost equal to the breaking strength. As is well known, they are commonly used with a factor of safety of about 2½ or even less, and do stand, on the whole, remarkably well. Yet broken springs are far from unknown, and few engineers would care to take the responsibility of using steels having similar characteristics on an important bridge. Possibly the notched-bar test may suffice to distinguish between safe and unsafe steels, but this, though plausible, is not yet certain. In fact, under certain conditions, steels giving excellent results in the notched-bar test have proved very unsatisfactory in practice. For instance, a 25 per cent nickel steel, having a tensile strength of 42 tons, an elastic limit of 24 tons, and an elongation of 30 to 45 per cent, absorbed, under the notched-bar test, an energy of 35 kilogrammes; yet, used in turbine-blades, this same material became quite brittle in the course of three or four years. Whether this was due to a chemical action, or whether it is a case of the deterioration of certain steels with age, of which Mr. Stromeier has brought forward some evidence, is as yet uncertain. The instance given, though of a somewhat special nature, does serve to show that laboratory tests can never wholly suffice to fix the practical utility of a new material. At the best they constitute strong presumptive evidence, but actual experience alone gives real security.

In view of the success of fairly hard

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steels in axles and rails, it is perhaps surprising that more continuous efforts have not been made to utilize these qualities in structural work. A bridge collapse is, however, more appalling to contemplate than a broken rail, although the latter may have sufficiently serious consequences. Indeed, when Bessemer first attempted to introduce steel rails, the fear of fracture was such that engineers declared he was wishing them to run the risk of a prosecution for manslaughter, and most searching experiments were necessary to convince them that even the relatively soft qualities of steel then used could be adopted with safety. With the harder steels now in use it is a common practice to remove worn rails from the main line to situations where a possible fracture is less likely to occasion a catastrophe; but no such plan of minimizing risks is practicable in the case of structural steel-work. It is therefore important to make certain that such steels can be relied on to give good service for a reasonable period.

Professor Waddell's investigations, as set forth in his diagrams, show that if high-tensile steel costs 60 per cent more than ordinary steel, it must be capable of carrying a working stress also greater by 60 per cent if any marked reduction is to be made in the cost of a bridge of ordinary span. If, however, the price of the high-tensile steel is 60 per cent more, while its working strength is but 40 per cent more, then, with these steels at present prices, there is no saving in cost by the use of the stronger metal until the span exceeds 200 feet, and at 660-foot span the saving is only a little more than 2 per cent. If, on the other hand, the high-tensile steel exceed the ordinary steel as much in strength as it now does in price, its use becomes economical at a span of about 100 feet, and the saving on a span at 660 feet is nearly 14 per cent on the cost of the bridge. If the price of both qualities falls in equal proportion, the saving by the adoption of the high-tensile steel falls off. While, on the other hand, should prices rise, the gain in its use increases.

Looking Up River Tonnage.

Manufacturing plants along the Monongahela, Allegheny and Ohio rivers are now receiving visits from a member of the United States engineering department to ascertain the tonnages shipped by river during the past 12 months. C. E. Ashcroft, junior engineer of the staff, is in charge of the work. Major H. C. Newcomer has placed the government launch at the disposal of the agent. This class of statistics is compiled annually. The report will be forwarded to Washington and used to determine if improvements made along the rivers have resulted in increased tonnage.



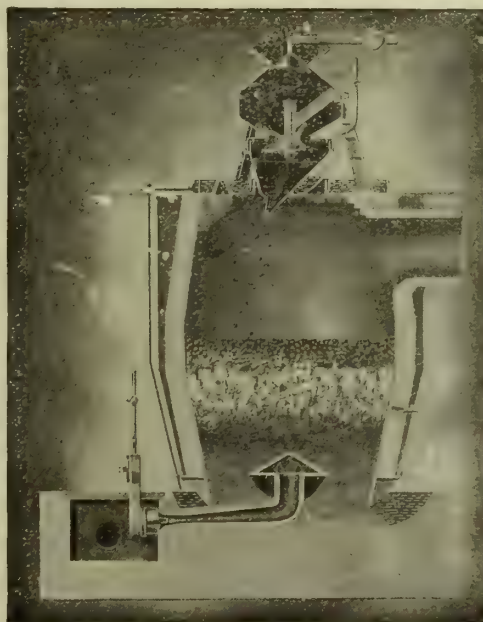
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FOREIGN NOTES.

Selling Tools to the Dutch.

In answer to an inquiry by Consul-General Soren Listoe, of Rotterdam, one of the largest importers of machine tools, and tools and hardware in the Netherlands, replied as follows:

At the present time as well as for the past year or two, the consensus of public opinion is decidedly in favor of American machine tools for metal working, and, as far as we are able to judge, about 50 per cent of these articles in use in the Netherlands are of American make. The machine tools in use in the leading shops, are for the greater part, if not exclusively, of American origin. There is evidence, however, of an attempt in some of the principal shops to introduce machines manufactured by the leading German makers, who try to turn out a machine which will equal the American-made tool in construction, though somewhat more strongly built.

The American machine-tool trade has, however, something to fear from the action of certain American houses who try to sell inferior quality goods at rather lower prices by trading on the good name of the majority of American manufacturers. We are well aware that in American houses they do not care so much about the long life of a machine. They say "take all the profit you can from your machine tools while they are up-to-date; scrap them as soon as you see something better is produced." People in the Netherlands, however, care very much about the long life of the machine tools they use, and consequently look out for a strongly built machine. It appears to us that the real difference lies between what the American manufacturer calls a strongly built machine-tool and the meaning which the same words have here. One of the first, and in fact the almost invariable, question put to a salesman in the Netherlands is: What is the weight of your machine? and it is often well-nigh impossible even for a thoroughly experienced technical man to persuade his customer to look at a machine of really original and up-to-date construction, as the latter will insist on considering solely and simply a machine, the chief quality of which is its exceptionally heavy make.

Public Works in Transvaal.

Consul Albert Halstead sends to the Federal Bureau of Manufactures the following statement from the Birmingham "Post" that the Transvaal in the coming year contemplates large expenditures on public works, including railways, iron bridges, telegraphs, and telephones:

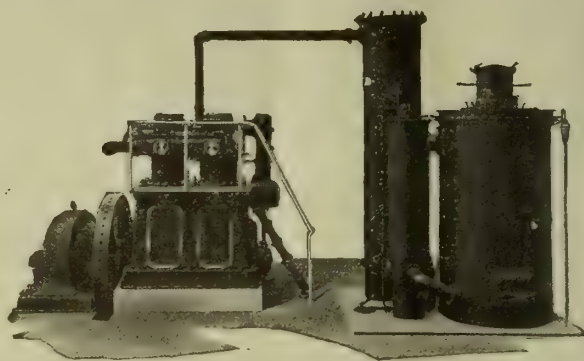
"The estimates of expenditure upon public works, as sanctioned by the Parliament of the Transvaal, for the coming

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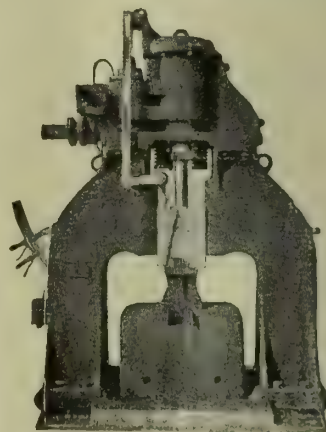
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Transvaal financial year have arrived at the agency for the colony in London, and indicate a remarkable program of internal development in South Africa. A large sum is now available for expenditure upon railways, iron bridges, telegraphs, and telephones, and other institutions of public utility. Even a cursory examination of the estimates shows what an increasing market the Transvaal will become in the near future for British manufacturers, especially for iron and steel products. Under the heading of "Works and bridges" alone an aggregate expenditure of £60,000 (\$291,990) is contemplated. Large orders for material, and particularly just now for that necessary for the extension of telegraphs and telephones, are being placed in this country by the Transvaal agency in London. It is understood that all such public works, including the extension of railways, in the Transvaal which may be unfinished, or at the stage of inception only when the Union of South Africa takes practical shape next year, will fail to be completed by the new Union administration."

American Safes in Scotland.

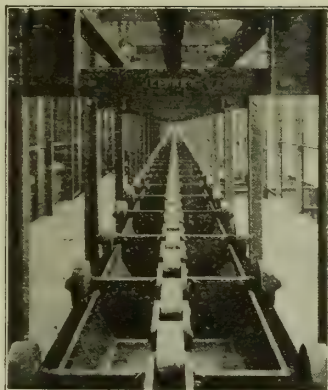
Consul J. N. McCrunn, of Glasgow, in a report to the Bureau of Manufactures on the growing demand for high-grade safes in the United Kingdom, says:

During the past few years there has been a large number of losses in Great Britain, especially in and near Glasgow, on account of poorly constructed safes. Many shopkeepers and business men owning cheap or antiquated safes, have become the victims of fires and burglars. These old safes are built, it is true, but not of the quality now used by the best manufacturers.

The losses mentioned may be in a large measure responsible for the present active demand for something better. The British safe, however, is hardly equal in finish to that of some American factories. Usually the British safe is locked with a key instead of a keyless combination lock, and key locks have serious objections. So far as I can learn no American safe is offered for sale in this market, nor have I heard of any foreign concern making sales here. As a rule small safes are more in demand on account of the large number of people who use them. If American safe manufacturers could meet current prices there seems to be no reason why they could not secure a share of this increasing business.

British Metal Institute.

At the autumn meeting of the British Institute of Metals, which will be held at Manchester on October 14 and 15, the following papers will be presented: "The



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Constitution and Properties of the Ternary Alloys Aluminium-Copper-Tin," by J. H. Andrews and C. A. Edwards; "The Surface Appearance of Solders," by C. O. Bannister and H. J. Tabor; "The Technical Assay of Zinc," by H. W. Greenwood; "Notes on the Production of Pure Spelter," by J. S. Glen Primrose; Some Causes of the Corrosion of Copper and Brass," by E. L. Rhead; "The Elastic Breakdown of Ductile Materials," by Professor C. A. Smith; "The Copper-Zinc Alloys: A Study of Volume Changes During Solidification," by Professor T. Turner and M. T. Murray.

Mexican Railway Improvements.

After January 1 the National railroads of Mexico will begin an annual expenditure of about \$6,000,000 gold in general repairing of the lines, installing heavier rails, and wherever necessary adding rolling stock, says the Mexican "Herald," which secured the following statement from the management:

"Most of the contemplated improvements will consist in putting in heavier rails wherever such is necessary either for safety in travel or for the making of better time. New ties and heavier ones will be put in over a great part of the main lines. A number of the present bridges will be replaced with superstructures. Much time and money will be spent also in straightening of the roadbed, ballasting, etc."

World's Pig Iron Production.

The production of pig iron throughout the world last year according to English statistics was 47,459,000 tons. In this total the United States figured for 15,936,000 tons; Germany for 11,616,000 tons; Great Britain for 9,290,000 tons; France for 3,337,000 tons; Russia for 2,600,000 tons; Austria and Hungary for 650,000 tons; Belgium for 1,187,000 tons; Canada for 563,000 tons; Sweden for 554,000 tons; Spain for 373,000 tons; Italy for 110,000 tons; Japan for 43,000 tons; and other countries for 200,000 tons. In 1907 the world's production amounted to 60,000,000 tons.

Sterling Company in New Quarters.

The Sterling Machine & Stamping Company has announced the removal of its plant from Vermilion, Ohio, to Wellington, Ohio. The new factory at Wellington will be in operation this week. The company manufactures gas generators, tire lugs, and other accessories for the automobile and in conjunction operates a stamping department producing parts from sheets and steel and brass. A new feature will be the brass foundry equipped for handling jobbing work.

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GENESIS OF PETROLEUM.

The Hypothesis of Mineral Origin.

In Bulletin 407 of the United States Geological Survey, just issued, George F. Becker reviews the evidence in the geological question of the origin of the hydrocarbons, asphalt, ozokerite, petroleum, and natural gas. The most orthodox opinion at the present day is that a part of the natural hydrocarbons is of organic origin; but when it comes to estimating the relative importance of the two portions there is no unanimity. On the whole the hypothesis of organic origin is the more fashionable; yet the rival view, originating with Alexander von Humboldt, is held by such living authorities as Sir Archibald Geikie, Mr. de Lapparent, Mr. Hschemak, and Edward Suess.

Although there are few occurrences of hydrocarbons which, taken singly, might not be explained on the hypothesis of organic origin, Mr. Becker finds the cases in which hydrocarbons are associated with ingenious phenomena so numerous and so diverse in character as to preclude the suggestion of merely fortuitous collocation. The evidence is mainly cumulative, but it has so accumulated and is so consistent as to carry conviction. Most of the hydrocarbons accompanied by ingenious phenomena must, he infers, be of inorganic origin and the quantity so produced must be very great. This conclusion does not preclude the importance of the indubitably organic bituminous shales, nor does it immediately afford a means of accounting for the great petroleum pools.

Some investigators regard the hydrocarbons as original constituents of the earth; others, and these are the more numerous, think them due to the decomposition of carbides of iron, or other metals, by water. Practically all iron, whether artificial or native, contains combined carbon as iron carbide. Other metallic carbides, though easily prepared in the laboratory, have not yet been detected in the earth. While terrestrial iron is widely disseminated (Mr. Becker records six new localities in the United States), meteoric waters seldom penetrate many thousand feet from the earth's surface; and this fact has been a serious objection to Mendeleef's hypothesis of petroleum genesis from iron carbide and water. But a Swiss chemist, Mr. A. Brun, has made the brief statement that, by heating ammonium chloride "with iron carbide, a paraffin-like substance was obtained accompanied by gaseous hydrocarbons and free hydrogen." Now ammonium chloride is very abundant in volcanic emanations and undoubtedly exists at great depths. Mr. Becker has conducted laboratory experiments on its behavior with native ter-

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restrial iron from Ovivak, Greenland, and found that the greater part of the carbon of this iron was converted into hydrocarbons.

It is highly probable that the earth contains a nucleus of metallic iron, the barysphere, but Mr. Becker thinks this too deeply buried to be concerned in the genesis of oil. On the other hand, the ingeous rocks seem to contain iron analogous to "shot metal" in slag, clouds of particles too small to sink through the pasty mass when in a state of viscous

fusion. It is to such metal, in the author's opinion, that supporters of the inorganic hypothesis must look for the origin of oil.

This view led him to compare the distribution of petroleum with the irregularities of the direction of the compass needle (magnetic of declination). These irregularities are due to various causes, one of which is the neighborhood of metallic iron. Somewhat to his astonishment, he found very marked disturbances of the needle in the principal oil fields,

while there are many regions of disturbance which are beyond a doubt independent of oil. Bulletin 401 contains a map showing both the oil fields (after D. T. Day) and the magnetic declination (after A. L. Bauer). Mr. Becker sums up as follows:

"Study of the map accompanying this paper justifies the statement that the coincidences between the occurrence of petroleum and local disturbances of the compass needle are too numerous to be attributable to mere accident or

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chance. There must, therefore, be a direct or an indirect historical connection between the two phenomena in the regions of coincidence.

"None of the hypothesis of petroleum genesis is proved by the relations shown on the map. These relations, however, are compatible with the supposition that the great oil deposits are generated from iron carbides either by or without the agency of water. Of these alternatives the latter is the more plausible.

"What the map does prove is that petroleum is intimately associated with magnetic disturbances similar to those arising from the neighborhood of minerals possessing sensible magnetic attraction, that is, iron, nickel, cobalt, or magnetite. Henceforth no geological theory of petroleum will be acceptable which does not explain this association."

NEW CONSTRUCTION.

Cincinnati, O. — Architect Anton Rieg, 2554 Vine street, has plans in progress for a two-story brick cigar box factory, to be erected on 225 Liberty street, for Frank Bauer, 225 Liberty street.

Springfield, O. — Wise & Hicks, Bushnell building, received the contract for building a reinforced concrete factory addition for the Foos Manufacturing Company, to cost \$1,500.

Ogdensburg, N. Y. — The Flos Shade Roller Company's plant, which was burned some 30 days ago, will be rebuilt. Two new drykills, 100x20 feet, and main factory building, 225x75 feet, two stories, with wing 125x25 feet will be built.

Bradford, Pa. — All buildings in connection with the plant to be built at Bradford, Pa., by the American Metal Door Company, of Jamestown, N. Y., have been built.

Buffalo, N. Y. — The Pierce Arrow Motor Car Company, Buffalo, N. Y., has placed a contract for three additional buildings in its manufacturing plant with the Aberthaw Construction Company, of Boston, Mass. The buildings, as are all the other buildings of this plant, will be of reinforced concrete of high class, fire-proof factory construction. They are to be completed this fall, and will enable the company to increase its output of cars. The Pierce Arrow plant is located on the old Exposition grounds, and the new buildings for which the Aberthaw Construction Company has the contract will be located on the site of the old Midway.

Ilion, N. Y. — The Remington Type-writer Company, 235 Broadway, Manhattan, is arranging for an extensive addition to its factory at Ilion, N. Y. The machinery requirements will include an additional power unit of a capacity not yet decided upon and machine tool equipment which will amount to about \$50,000. The details are in the hands of the factory superintendent.

Appleton, Wis. — The Appleton Wire Works Company will erect in addition to their plant.

Wausau, Wis. — Dennis Finney, will erect a three-story varnish factory here, to cost about \$6,000.

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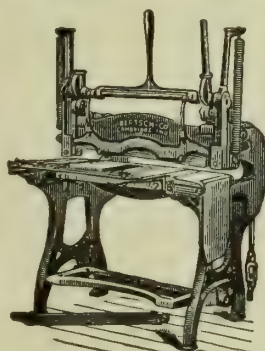
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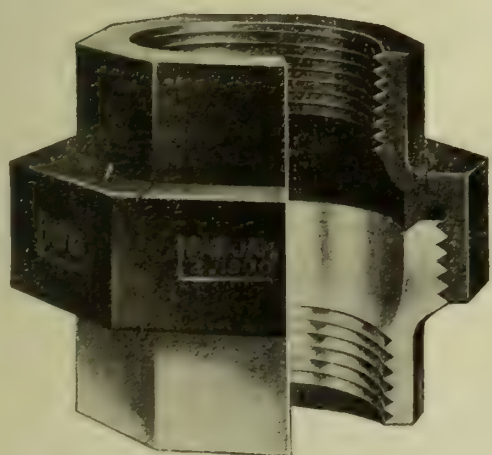


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Pittsburgh-Buffalo Co. Pittsburgh.
Washington Coal & Coke Co. Pittsburgh.

CONTRACTOR TYPE APPARATUS.
Cutler-Hammer Mfg. Co., The
..... Milwaukee, Wis.

CHISEL BLANKS.
Cleveland Crane & Eng. Co., Wickliffe, O.

CIRCUIT BREAKERS.
Electric Controller & Mfg. Co.
..... Cleveland, O.

**COAL AND ASH HANDLING MA-
CHINERY.**
Browning Eng. Co. Cleveland, O.
Industrial Works. Bay City, Mich.
Jeffrey Manufacturing Co. Columbus, O.

CONTROLLERS (Electric).
Electric Con. & Mfg. Co. Cleveland, O.
Otis Elevator Co. Pittsburgh.

CONVEYORS AND ELEVATORS.
Scaife Fdry & Mach. Co. Pittsburgh.

CONVEYING MACHINERY.
Browning Eng. Co. Cleveland, O.
Jeffrey Manufacturing Co. Columbus, O.

CORRUGATED IRON.
McCullough Iron Co. Wilmington, Del.
Wm. B. Scaife & Sons Co. Pittsburgh

Lewis Fdry & Machine Co. Pittsburgh.
Link-Belt Company Philadelphia.
McLanahan Stone Machine Co.
..... Hollidaysburg, Pa.

Mackintosh, Hemphill & Co. Pittsburgh.
Mesta Machine Co. Pittsburgh.
Scaife Fdy. & Machine Co. Pittsburgh.

Taylor-Wilson Mfg. Co. Pittsburgh.
United Eng. & Fdry Co. Pittsburgh, Pa.
Wheeling Mold & Foundry Co.
..... Wheeling, W. Va.

CEMENT.
Universal Portland Cement Co.
..... Pittsburgh.

CENTRAL CONDENSERS.
Mesta Machine Co. Pittsburgh.
Southwark Foundry & Machine Co.,
..... Philadelphia

CEMENT MACHINERY.
American Clay Working Mach. Co.,
..... Bucyrus, O.

CHAIN BELTING.
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.
McLanahan-Stone Machine Co.
..... Hollidaysburg, Pa.
Scaife Fdy. & Machine Co. Pittsburgh.

CHEMISTS.
Gulick-Henderson & Co. Pittsburgh.

CLAPPER TYPE SWITCHES.
Cutler-Hammer Mfg. Co., The
..... Milwaukee, Wis.

CRANE UNLOADERS.
Link-Belt Company Philadelphia.

CARS (Industrial).
Link-Belt Company Philadelphia.

CAR HAULS.
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.

CARRIERS.
Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia.

CHROME BRICK.
Gulick-Henderson & Co. Pittsburgh.
Stowe-Fuller Co. Cleveland, O.

**COAL & ORE BRIDGE CONTROL-
LERS.**
Cutler-Hammer Mfg. Co., The
..... Milwaukee, Wis.

COAL.
Jamison Coal & Coke Co. Pittsburgh.
Pittsburgh-Buffalo Co. Pittsburgh.
Washington Coal & Coke Co. Pittsburgh.

CONTRACTOR TYPE APPARATUS.
Cutler-Hammer Mfg. Co., The
..... Milwaukee, Wis.

CHISEL BLANKS.
Cleveland Crane & Eng. Co., Wickliffe, O.

CIRCUIT BREAKERS.
Electric Controller & Mfg. Co.
..... Cleveland, O.

**COAL AND ASH HANDLING MA-
CHINERY.**
Browning Eng. Co. Cleveland, O.
Industrial Works. Bay City, Mich.
Jeffrey Manufacturing Co. Columbus, O.

CONTROLLERS (Electric).
Electric Con. & Mfg. Co. Cleveland, O.
Otis Elevator Co. Pittsburgh.

CONVEYORS AND ELEVATORS.
Scaife Fdry & Mach. Co. Pittsburgh.

CONVEYING MACHINERY.
Browning Eng. Co. Cleveland, O.
Jeffrey Manufacturing Co. Columbus, O.

CORRUGATED IRON.
McCullough Iron Co. Wilmington, Del.
Wm. B. Scaife & Sons Co. Pittsburgh

CONCRETE WORK.

Brown Engineering Co.Pittsburgh.

CORRUGATED SHEETS.American Sheet & Tin Plate Com-
panyPittsburgh**CHROME ORE.**

Stowe-Fuller Co.Cleveland, O.

CONTRACTORS.

Wm. Swindell & BrosPittsburgh.

The S. R. Smythe Co.Pittsburgh.

Wickes BrothersPittsburgh.

CRANE CONTROLLERS.Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.**CRANES—LOCOMOTIVE.**

Brown Hoisting Mach. Co.Cleveland, O.

Browning Engineering Co.
.....Cleveland, OCleveland Crane & Eng. Co.
.....Wickliffe, O.

H. J. KoontzPittsburgh.

Industrial WorksBay City, Mich

Northern Eng. WorksDetroit, Mich

CRANES & HOISTING MACHINERY

Baird Machinery Co.Pittsburgh.

Browning Engineering Co.
.....Cleveland, OCleveland Crane & Eng. Co.
.....Wickliffe, O.

Industrial WorksBay City, Mich

H. J. KoontzPittsburgh

Link-Belt CompanyPhiladelphia.

Northern Engineering Works
.....Detroit, Mich.**CRUCIBLES.**

Jos. Dixon Crucible Co.Jersey City.

CRUCIBLE STEEL.

McKenna Bros. Brass Co.Pittsburgh

Wm. Jessop & Sons, Ltd.New York.

CUPOLA BLOCKS.

Stowe-Fuller Co.Cleveland, O

CYLINDERS.

Mesta Machine Co.Pittsburgh

Wm. B. Scaife & Sons Co.Pittsburgh

COUPLINGS.

National Tube Co.Pittsburgh

COUPLINGS (Flexible).

Electric Con. & Mfg. Co.Cleveland, O.

CEMENT-HANDLING MACHINERY

Link-Belt CompanyPhiladelphia.

CHAINS.

Jones & Laughlin Steel Co.Pittsburgh.

Link-Belt CompanyPhiladelphia.

CHAINS (Dodge, Ewart, Ley, Monobar,**Etc.).**

Link-Belt CompanyPhiladelphia.

CHAIN DRIVES.

Link-Belt CompanyPhiladelphia.

CHAIN HOISTS.

Link-Belt CompanyPhiladelphia.

CHAIN SLINGS.

Link-Belt CompanyPhiladelphia.

CONVEYORS (Belt).

Link-Belt CompanyPhiladelphia.

CONVEYORS (Flight).

Jeffrey Manufacturing Co.Columbus, O.

Link-Belt CompanyPhiladelphia.

CONVEYORS (Screw).

Jeffrey Manufacturing Co.Columbus, O.

Link-Belt CompanyPhiladelphia.

CHANNELS.

Jones & Laughlin Steel Co.Pittsburgh.

W. N. Kratzer Co.Pittsburgh.

W. G. McKenney & Co.Pittsburgh.

Wm. B. Scaife & Sons Co.Pittsburgh.

COAL HAULING TIPPLES, MINING,**WASHING & CRUSHING PLANTS.**

C. O. Bartlett & Snow Co., Cleveland, O.

Jeffrey Manufacturing Co.Columbus, O.

COCKS (Iron Body and "High-Duty-**Metal")**

National Tube Co.Pittsburgh, Pa.

COKE.

Bessemer Coke Co.Pittsburgh.

Reed F. Blair & Co.Pittsburgh.

Jamison Coal & Coke Co.Pittsburgh

McKeefrey & Co.Leetonia, O.

Pittsburgh-Buffalo Co.Pittsburgh.

Rogers, Brown & Co.Cincinnati, O.

L. & R. Wister & Co.Philadelphia.

Washington Coal & Coke Co.Pittsburgh.

COLUMNS.

Jones & Laughlin Steel Co.Pittsburgh.

W. N. Kratzer Co.Pittsburgh.

Meehan Boiler & Con. Co.Lowellville, O.

Wm. B. Scaife & Sons Co.Pittsburgh.

COLD DRAWN STEED SHAFTING**AND SHAPES.**

Cumberland Steel Co.Cumberland, Md.

CONDENSORS.

Mesta Machine Co.Pittsburgh.

Southwark Foundry & Machine Co.
.....Philadelphia.

Wickes BrothersPittsburgh.

CONSULTING ENGINEER.

Brown Engineering Co.Pittsburgh.

Duff, Samuel E.Pittsburgh.

Kennedy, JulianPittsburgh.

CONTRACT ROLL TURNING.

The Heinle CompanyPittsburgh.

CONVEYORS & ELEVATORS.

C. O. Bartlett & Snow Co.Cleveland, O.

Link-Belt CompanyPhiladelphia.

Jeffrey Manufacturing Co.Columbus, O.

COPING MACHINES.

Cleveland Crane & Eng. Co., Wickliffe, O.

CLAY MACHINERY.American Clay Working Mach. Co.
.....Bucyrus, O.Connellsville Mfg. & Mine Supply Co.
.....Connellsville, Pa.

Philips & McLaren Co.Pittsburgh.

Wickes BrothersPittsburgh.

COUPLING NUTS.

Cleveland Crane & Eng. Co., Wickliffe, O.

CUPOLAS.

Northern Eng. WorksDetroit, Mich.

Riter-Conley Mfg. Co.Pittsburgh.

CUPOLA BLOCKS.

United Fire Brick Co.Uniontown, Pa.

DIMMERS.Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.**DISC BRAKES.**Cutler-Hammer Clutch Co., The
.....Milwaukee, Wis.**DITCHERS.**

Browning Eng. Co.Cleveland, O.

DIES.

Cleveland Crane & Eng. Co., Wickliffe, O.

DRIFT PINS.

Cleveland Crane & Eng. Co., Wickliffe, O.

DOVETAIL ROLLS.

The Heinle CompanyPittsburgh

DOUBLERS.Cincinnati Punch & Shear Com-
panyCincinnati, O.**DIRECT MOTOR DRIVES.**

Crocker-Wheeler Co.Ampere, N. J.

DREDGING MACHINERY.

C. O. Bartlett & Snow Co.Cleveland, O.

Jeffrey Manufacturing Co.Columbus, O.

DRIVE WELL POINTS AND WELL**SUPPLIES.**

National Tube Co.Pittsburgh, Pa.

DREDGE CHAINS.

Jeffrey Manufacturing Co.Columbus, O.

Link-Belt CompanyPhiladelphia.

DREDGES.

Jeffrey Manufacturing Co.Columbus, O.

Link-Belt CompanyPhiladelphia.

DROP HAMMERS.Chambersburg Engineering Com-
panyChambersburg, Pa.**DYNAMO BRUSHES.**Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.**DRAWINGS.**

Brown Engineering Co.Pittsburgh.

DRIVE CHAIN.

Link-Belt CompanyPhiladelphia.

DYNAMOS & MOTORS.

Crocker-Wheeler Co.Ampere, N. J.

H. J. KoontzPittsburgh

Wickes BrothersPittsburgh.

ECCENTRIC ROLLS.

The Heinle CompanyPittsburgh

ELECTRIC HOISTS.

Cleveland Crane & Eng. Co. Wickliffe, O

ELECTRIC FAULT FINDER.

Electric Con. & Mfg. Co.Cleveland, O.

ELECTRIC LIGHTING MACHINERY.

Crocker-Wheeler Co.Ampere, N. J.

Southwark Foundry & Machine Co.
.....Philadelphia.

Wickes BrothersPittsburgh.

ELEVATOR CONTROLLERS AND**ACCESSORIES.**Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.**ELEVATORS.**

Jeffrey Manufacturing Co.Columbus, O.

Otis Elevator Co.Pittsburgh.

Scaife Fdry & Mach. Co.Pittsburgh.

ENGINEERS.

Alex Laughlin & Co.Pittsburgh.

Brown Engineering Co.Pittsburgh.

Chambersburg Engineering Co.
.....Chambersburg, Pa.

Duff, Samuel E.Pittsburgh

Link-Belt CompanyPhiladelphia.

Julian KennedyPittsburgh

G. W. McClure Son & Co.Pittsburgh

Morgan Construction Co.
.....Worcester, Mass.

Smythe, The S. R. Co.Pittsburgh.

Wm. B. Scaife & Sons Co.Pittsburgh.

United Eng. & Fdry Co.Pittsburgh, Pa.

William Swindell & Bro.Pittsburgh

ENGINEERS—INSPECTING.

Gulick-Henderson & Co.Pittsburgh

ENGINEERS—LABORATORY.

Gulick-Henderson & Co.Pittsburgh

ENGINEERS (Mechanical).

Link-Belt CompanyPhiladelphia

EQUALIZING GEARS.

Link-Belt CompanyPhiladelphia

ENGINES—STEAM.Connellsville Mfg. & Mine Supply Co.
.....Connellsville, Pa.

H. J. KoontzPittsburgh

Mackintosh, Hemphill & Co.Pittsburgh.

Mesta Machine Co.Pittsburgh

Southwark Foundry & Machine Co.
.....Philadelphia

Wickes BrothersPittsburgh

EXHAUST PIPE HEADS.

Direct Separator Co.Syracuse, N. Y

FAN REGULATORS.Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.**FIELD REGULATORS.**Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.**FIRE PUMP STARTERS.**Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.**FLANGING CLAMPS.**Chambersburg Engineering Com-
panyChambersburg, Pa.

Cleveland Crane & Eng. Co. Wickliffe, O

FLANGE COUPLINGS.

Cumberland Steel Co.Cumberland, Md.

FLIGHT CONVEYORS.

Link-Belt CompanyPhiladelphia

FORGINGS.

Cleveland Crane & Eng. Co., Wickliffe, O.

W. N. Kratzer & Co.....Pittsburgh.
Wm. B. Scaife & Sons Co...Pittsburgh.
Heppenstall Forge & Knife Co.....Pittsburgh.
Mesta Machine Co.Pittsburgh

FLOAT SWITCHES.

Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

FORGING PRESSES.

Chambersburg Engineering Com-
panyChambersburg, Pa.
United Eng. & Fdry Co...Pittsburgh, Pa.

FOUNDRIY EQUIPMENTS.

Baird Machinery Co.Pittsburgh.
Cleveland Crane & Eng. Co. Wickliffe, O.
Meehan Boiler & Con. Co. Lowellville, O.
Northern Engineering Works
.....Detroit, Mich.
Wickes BrothersPittsburgh.

FIREBRICK AND CLAY.

Bickford Fire Brick CoPittsburgh.
Clearfield Fire Brick Co...Clearfield, Pa.
Dover Fire Brick Co.Cleveland, O.
Kier Fire Brick Co.Pittsburgh.
Pittsburgh-Buffalo Co.Pittsburgh.
Stuart Fire Brick Company..Pittsburgh.
Sharon Fire Brick Co.Sharon, Pa.
Jos. Soisson Fire Brick Co.
.....Connellsville, Pa.
Sandy Ridge Fire Brick Co.....
.....Sandy Ridge, Pa.
The Stowe-Fuller Co.Cleveland, O.
United Fire Brick Co.Pittsburgh.
W. H. Wynn & Co. .West Decatur, Pa.

FITTINGS (Electric Crane).

Electric Con. & Mfg. Co...Cleveland, O.

FITTINGS (Malleable and Cast Iron.)
National Tube Co.....Pittsburgh, Pa.

FIRE ESCAPES.

W. N. Kratzer & Co.....Pittsburgh.
W. G. McKenney & Co.Pittsburgh.

FIREPROOFING.

W. N. Kratzer & Co.....Pittsburgh.
**FEED WATER HEATERS, FILTERS
AND PURIFIERS.**

H. J. KoontzPittsburgh
Petroleum Iron WorksSharon, Pa.
Wm. B. Scaife & Sons Co...Pittsburgh.
Wickes BrothersPittsburgh.

FURNACE BUILDERS.

Julian KennedyPittsburgh.
Alex Laughlin & Co.Pittsburgh.
Morgan Con. Co.Worcester, Mass.
G. W. McClure Son & Co.Pittsburgh.
Wm. B. Scaife & Sons Co...Pittsburgh.
The S. R. Smythe Co.Pittsburgh.
William Swindell & BroPittsburgh.
Tate, Jones & Co., Inc.Pittsburgh.

FLAG STAFFS.

National Tube Co.....Pittsburgh, Pa.

FLANGES (Cast and Malleable.)

National Tube Co.....Pittsburgh.

FRICTION CLUTCHES.

Link-Belt CompanyPhiladelphia.
Wickes BrothersPittsburgh.

GALVANIZED SHEETS.

American Sheet & Tin Plate Com-
panyPittsburgh.
McCullough Iron Co. .Wilmington, Del.

GAS BURNERS.

Tate, Jones & Co., Inc.Pittsburgh.

GAS PRODUCERS.

Alex Laughlin & Co.Pittsburgh.
Morgan Con. Co.Worcester, Mass.
Riter-Conley Mfg. Co.Pittsburgh.
Struthers-Wells Co.Warren, Pa.
The S. R. Smythe Co.Pittsburgh.
William Swindell & Bro.Pittsburgh.

GAS ENGINES.

Mesta Machine Co.Pittsburgh.
Struthers-Wells Co.Warren, Pa.
Wickes BrothersPittsburgh.

GATE SHEARS.

Cincinnati Punch & Shear Co., Cincinnati
Cleveland Crane & Eng. Co., Wickliffe, O.

GEARS.

Taylor-Wilson Mfg. Co....Pittsburgh.
Mesta Machine Co.Pittsburgh.

GEARING (Bevel, Mitre, Spur, etc.)
Link-Belt CompanyPhiladelphia.

GIRDERS.

Jones & Laughlin Steel Co...Pittsburgh.
Meehan Boiler & Con. Co. Lowellville, O.
W. N. Kratzer Co.Pittsburgh.
Wm. B. Scaife & Sons Co...Pittsburgh

GAS AND AIR VALVES.

Taylor-Wilson Mfg. Co....Pittsburgh.

GRAPHITE.

Jos. Dixon Crucible Co....Jersey City

GRAY IRON CASTINGS.

Cleveland Crane & Eng. Co., Wickliffe, O.

GREASE.

Jos. Dixon Crucible Co....Jersey City

GUILLOTINE SHEARS.

Cleveland Crane & Eng. Co., Wickliffe, O.

GENERATORS.

Crocker-Wheeler Co....Ampere, N. J.
Wickes BrothersPittsburgh

HEAD FRAMES.

Riter-Conley Mfg. Co.Pittsburgh.

HIGH SPEED PUNCHES.

Cleveland Crane & Eng. Co., Wickliffe, O.

HOISTING ENGINES.

Otis Elevator Co.Pittsburgh.
Wickes BrothersPittsburgh.

HORIZONTAL DRILLS.

Baird Machinery Co.Pittsburgh.

HORIZONTAL PUNCHES.

Cincinnati Punch & Shear Co., Cincinnati
Cleveland Crane & Eng. Co., Wickliffe, O.

HOT METAL CARS.

Meehan Boiler & Con. Co. Lowellville, O.

HOT BLAST STOVES.

G. W. McClure Son & Co...Pittsburgh.

HYDRAULIC MACHINERY.

Baird Machinery Co.Pittsburgh.
Chambersburg Engineering Co.....
.....Chambersburg, Pa.

Lewis Fdry. & Machine Co...Pittsburgh.
Mesta Machine Co.Pittsburgh.
Scaife Fdry. & Machine Co...Pittsburgh.

**HYDRAULIC VALVES AND FIT-
TINGS.**
Chambersburg Engineering Com-
panyChambersburg, Pa.
National Tube Co.Pittsburgh.

HYDRAULIC PUMPS.

Chambersburg Engineering Com-
panyChambersburg, Pa.
Wickes BrothersPittsburgh.

INCORPORATING.

The Argus CorporationPittsburgh.

INDUSTRIAL RAILWAYS.

Link-Belt CompanyPhiladelphia.

IGNITION BATTERY RHEOSTATS.
Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

INSPECTION.

The Heinle CompanyPittsburgh.
Gulick-Henderson & Co....Pittsburgh.

IRON FENCING.

W. N. Kratzer & Co.....Pittsburgh.

IRON ROOFS & BUILDINGS.

W. N. Kratzer & Co.....Pittsburgh.
Wm. B. Scaife & Sons Co...Pittsburgh.
Riter-Conley Mfg. Co.....Pittsburgh.

IRON & STEEL BARS.

W. G. McKenney & Co.Pittsburgh.

"KEWANEE" UNIONS & SPECIAL- TIES.

National Tube Co.....Pittsburgh, Pa.

LABORATORY ORE GRINDERS.

McKenna Bros. Brass Co...Pittsburgh.

LADLES.

Meehan Boiler & Con. Co. Lowellville, O.
Petroleum Iron WorksSharon, Pa.

LATHES.

Baird Machinery Co.Pittsburgh.
Wickes BrothersPittsburgh.

LIFTING MAGNETS.

Browning Eng. Co.Cleveland, O.
Cutler-Hammer Clutch Co., The ...
.....Milwaukee, Wis.

LIMIT SWITCHES.

Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

LINK-BELTING.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt CompanyPhiladelphia.

LOCOMOTIVE CRANES.

Browning Eng. Co.Cleveland, O.
Industrial WorksBay City, Mich.
Wickes BrothersPittsburgh.

LINK-BELT (Original "Ewart").
Link-Belt CompanyPhiladelphia.

LUBRICANTS.

Jos Dixon Crucible Co....Jersey City.

MACHINE TOOL CONTROLLERS.
Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

MAGNETIC CLUTCHES.

Cutler-Hammer Clutch Co., The ...
.....Milwaukee, Wis.

MAGNETIC SEPARATORS.

Cutler-Hammer Clutch Co., The ...
.....Milwaukee, Wis.

MATRIX ROLLER CONTROLLERS.
Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

MACHINE TOOLS.

Baird Machinery Co.Pittsburgh.
Wickes BrothersPittsburgh.
H. J. KoontzPittsburgh

MACHINE BOLTS.

Riter-Conley Mfg. Co.....Pittsburgh.

MACHINISTS.

Link-Belt CompanyPhiladelphia.

MAGNETS (Electric Lifting).

Electric Con. & Mfg. Co...Cleveland, O.

MAGNESIA BRICK.

Stowe-Fuller Co.Cleveland, O.

MALLEABLE CASTINGS.

Jeffrey Manufacturing Co..Columbus, O.

MASTER SWITCHES.

Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

METAL STAMPING & FORMING.

Avery Stamping Co.Cleveland, O.

METALLURGISTS.

Gulick-Henderson & Co....Pittsburgh.

METAL CONFORMATION.

The Heinle Co.Pittsburgh.

MILLING MACHINES.

Baird Machinery Co.Pittsburgh

SHEET METAL MACHINERY.

Cincinnati Punch & Shear Com-
panyCincinnati, O.

METAL WORKING MACHINERY.
Cincinnati Punch & Shear Com-
panyCincinnati, O.

MINING MACHINERY & SUPPLIES
C. O. Bartlett & Snow Co..Cleveland, O.
Connellsville Mfg. & Mine Supply Co.
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Manufacturers of

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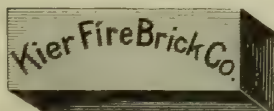
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First Quality Clay and
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Meehan Boiler & Con. Co..Lowellville, O.
Phillips Mine & Mill Supply Co.....
.....Pittsburgh.
Scaife Fdry. & Machine Co..Pittsburgh.
Wickes BrothersPittsburgh.

MOTORS.

Crocker-Wheeler Co.....Ampere, N. J.
Riter-Conley Mfg. Co.....Pittsburgh.
Wickes BrothersPittsburgh.

MULTIPLE PUNCHES.

Cincinnati Punch & Shear Co., Cincinnati
Cleveland Crane & Eng. Co., Wickliffe, O.

NAVY APPARATUS.

Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

ORGAN REGULATORS.

Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

OIL BURNERS.

Tate, Jones & Co., Inc.Pittsburgh.

ORE CARS.

Jeffrey Manufacturing Co..Columbus, O.

ORE & ROCK CRUSHERS.

Jeffrey Manufacturing Co..Columbus, O.
McLanahan & Stone, Hollidaysburg, Pa.
Phillips & McLaren Co.....Pittsburgh.
Wickes BrothersPittsburgh.

ORE HANDLING MACHINERY.

Brown Hoisting Mach. Co., Cleveland, O.
C. O. Bartlett & Snow Co..Cleveland, O.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt CompanyPhiladelphia.

ORE CONCENTRATORS & SEPARATORS.

McLanahan & Stone, Hollidaysburg, Pa.

PATENTS.

J. M. NesbitPittsburgh.
Siggers & Siggers ..Washington, D. C.

PAINT.

Jos Dixon Crucible Co...Jersey City.

"PECK" CARRIERS.

Link-Belt CompanyPhiladelphia.

PIPE COILS.

National Tube Co.Pittsburgh

PIG METAL, ORES, &c.

Columbus Iron & Steel Co..Columbus.
McKeefrey & Co.Leetonia, O.
Rogers, Brown & Co.....Cincinnati, O.
L. & R. Wister & Co.Philadelphia

PENSTOCKS.

Riter-Conley Mfg. Co.Pittsburgh.

PIPE MILL MACHINERY.

Taylor-Wilson Mfg. Co....Pittsburgh.

PIPE JOINT COMPOUND.

Jos. Dixon Crucible Co...Jersey City

PILE DRIVERS.

Industrial Works.....Bay City, Mich

PILLAR CRANES.

Industrial Works.....Bay City, Mich

PIPES (RIVETED STEEL).

Riter-Conley Mfg. Co.Pittsburgh

PIPE & PIPE FITTINGS.

National Tube Co.....Pittsburgh, Pa.
U. S. Cast Iron & Pipe Fdry Co..
.....Scottdale, Pa.
Wickes BrothersPittsburgh.

PLATE GLASS MACHINERY.

Rosedale Fdry & Mach. Co..Pittsburgh.

PLATE WORKS.

Meehan Boiler & Con. Co. Lowellville, O.
Petroleum Iron Works..Washington, Pa.
Riter-Conley Mfg. Co.....Pittsburgh.
Struthers-Wells Co.Warren, Pa.

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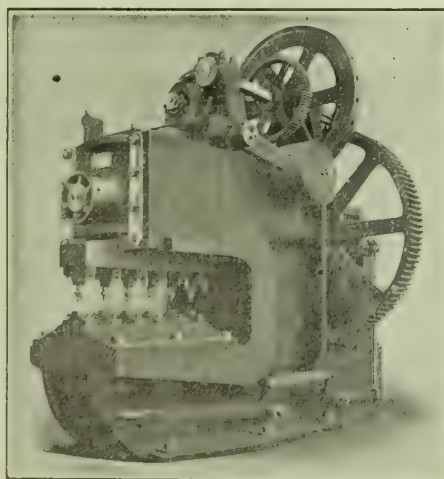
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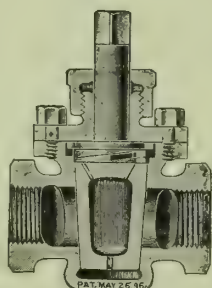
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MONDAY, OCTOBER 11, 1909.

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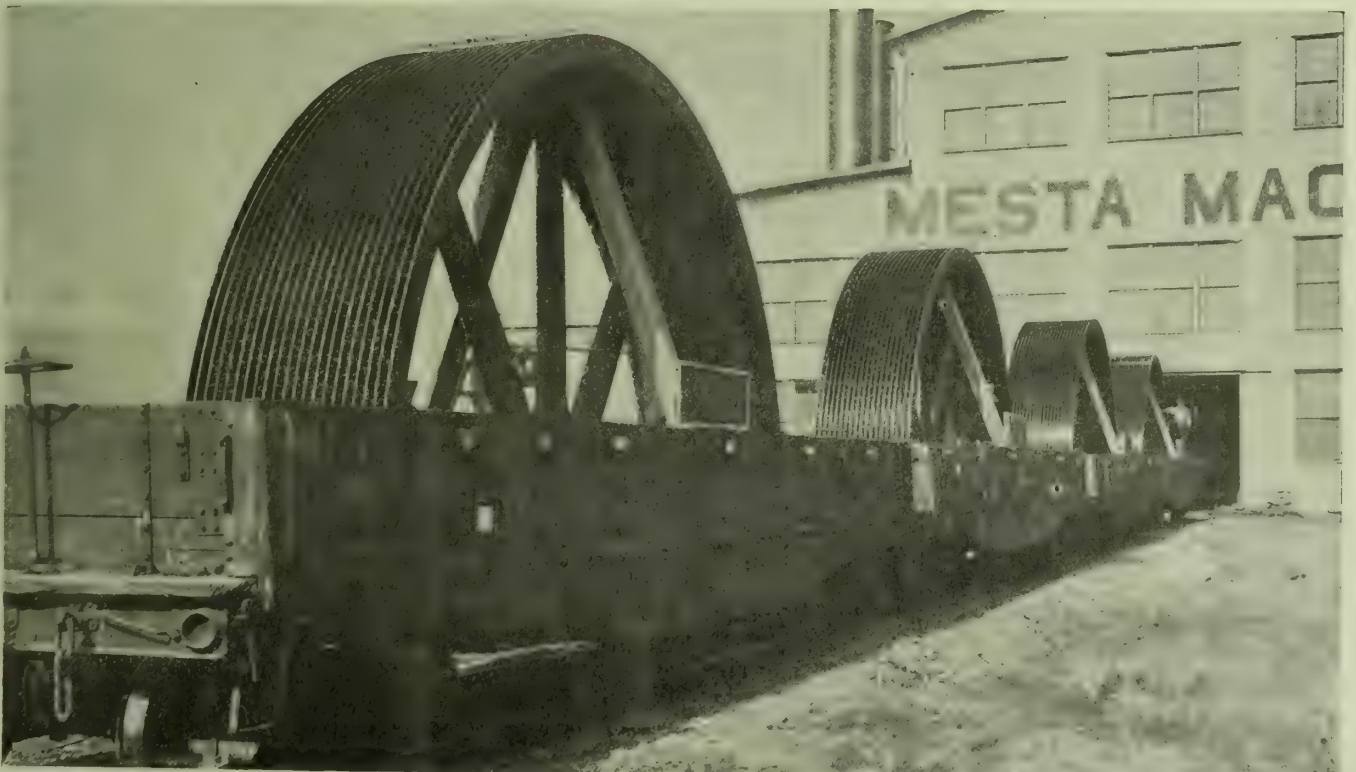
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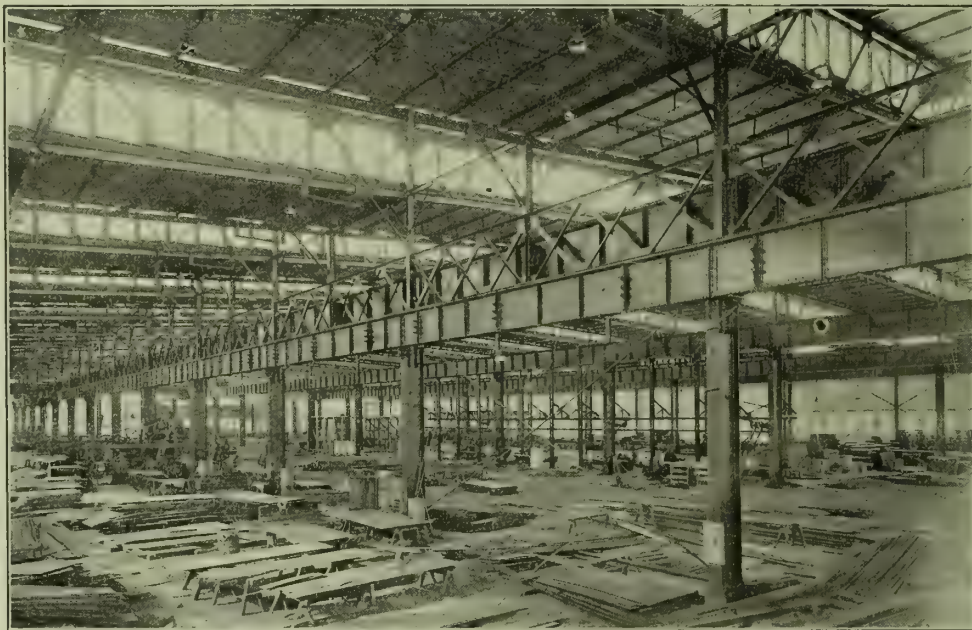
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INDUSTRIAL WORLD

FORTY-THIRD YEAR.

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Summary of General Iron and Steel Markets

PROSPECT OF SHORTAGE OF BESSEMER IRON IN PITTSBURGH DISTRICT BEFORE CLOSE OF YEAR—PURCHASE BY THE CAMBRIA STEEL PRACTICALLY EXHAUSTS VISIBLE SUPPLY—MILLS ARE SPEEDED UP TO NEW OUTPUT REQUIREMENTS — NEW RECORDS IN PIG IRON OUTPUT FOR SEPTEMBER—THE COKE SITUATION.

AN unexpected raid on the pig iron supply in the Mahoning and Shenango Valleys toward the close of the week has resulted in a situation that makes a famine in Bessemer pig, with consequent "squeeze" prices, seem inevitable before the close of the year.

On Wednesday and Thursday, the Cambria Steel Company came into Pittsburgh market and bought 41,000 tons of Bessemer iron, 18,000 tons for fourth quarter delivery at \$18, Valleys, and 23,000 tons for first quarter of 1910, at \$18.50. This has virtually cleaned up all the available Bessemer for prompt delivery. The Bessemer Pig Iron Association, which sold most of the iron to the Cambria, is said to be almost completely cleaned out up to April 1, 1910.

The Cambria asked for 50,000 tons, originally, and picked up much of the purchase in small lots. As a result of the sale, Bessemer pig iron immediately settled at \$18.50, Valleys, for this year's delivery. The first sale at this price was closed Saturday, by W. P. Snyder & Company, 3,000 tons, the iron being for immediate shipment from Valley furnace to a Pittsburgh buyer.

The pig iron situation is only half the story in Pittsburgh district this week. Mills of both the combine and the inde-

pendents have been speeded up to new output requirements for the last quarter of the year. Steel mills are promising no deliveries on plates, and bars and shapes ordered now, before the first of the year. The prospect of the expected mid-winter lull, even in structural lines, has passed. There will be no lull—and the mills of Pittsburgh district see no means of avoiding the dilemma of opening the year with deliveries six to eight weeks behind.

Rail orders during the week brought the totals on the books of the Chicago and Gary mills past the 500,000-ton mark, and as a consequence no more orders will be taken at these mills for rolling before January 1. This total does not include the tonnage ordered 10 days ago by the Pennsylvania Railroad, about 85,000 tons of which will come to the Carnegie mills at Pittsburgh. The New York Central's rail order for 250,000 tons is expected to be filed before the close of the present week. One Western system has taken 70,000 tons from the Illinois Steel Company; the Atlantic Coast Line has filed specifications for 15,000 tons with the Tennessee Coal & Iron Company; and the St. Paul road has added 16,000 tons to its previous order of 75,000.

The increase in the foundry and ma-

chine business has brought an augmented demand for steel bars, billets and other semi-finished products. The Carnegie Steel Company will sell no steel bars for first quarter at less than 1.45c, which is one point above present prices. Iron bars are still stronger, and are quoted as high as 1.60c, Pittsburgh. Scrap has reached much higher levels. Railroads which are building their own cars are joining in the rush for plates for their shop work, and mills are worse behind on plates and shapes than on any other branch of finished materials.

September probably broke the record in Pittsburgh for the tonnage of pig iron that changed hands. Total sales of Bessemer for the month were 216,000 tons; and sales since October 1 increase the total sold here in the 40 days since the opening of September to 275,000 tons of the Bessemer grade alone. The furnace report for September shows a total output of all grades for the month of 2,388,988 tons, which breaks the record of all months in the iron trade's history. This is at the rate of 28,670,000 tons a year, or a half million tons more than the total rated capacity of the country, as given last summer.

The remarkable thing about the September output is that the furnaces did not seem to gain an inch on the mills as the result of the immense production. Stocks are reported all over the country as being lower than they were the first of September. Therein lies the danger of a genuine pig iron famine, in which the threatened importation of English and German iron will be welcomed on all sides. Conservative estimates place the amount of foundry iron sold in the different centers during September at 600,000 tons, and from the foundrymen come the report that the iron was melted as fast as received—in other words, the stocks in foundry yards diminished instead of increased. Eastern price levels for foundry grades, however, have settled a little as a result of news of negotiations for importations of Swedish and English pig metal.

The coke market occupies the unique position of getting more in some cases for prompt shipments than for future contracts. The \$3 price for next year's furnace coke was established on Thursday, by the sale of 3,000 tons of the Lackawanna Steel Company, at that figure, for delivery over the first six months of 1910.

Improvements in Youngstown District

By Republic and Carnegie Companies

ANNOUNCEMENT IS MADE BY CHAIRMAN TOPPING, AND DEFINITE STATEMENT EXPECTED SHORTLY BY STEEL CORPORATION OFFICIALS—DRIVE MILLS FOR NEW RECORDS.

Announcement of improvements to cost \$3,000,000 by the Republic Iron & Steel Company, has been made by John A. Topping, chairman of the board.

Mr. Topping states that the executive committee of the company has authorized the use of the proceeds of the last sale of preferred stock in improvements that will bring the company's productive capacity of ingots up to a total of about 1,250,000 tons, and will increase the output nearly 40 per cent.

The improvements will consist of one additional blast furnace, open hearth steel works, a blooming mill and a continuous mill. The new equipment will be installed at Haselton, O., near Youngstown at a point on the Mahoning river immediately opposite the Haselton blast furnaces and adjoining the new steel tube works now under construction by the Republic company. Work on the new construction will begin immediately.

The Republic company will start its Toledo, O., plant October 18. The plant has been idle for about two years. It makes a full line of iron bars, having an 8-inch, a 10-inch and a 16-inch mill. This will be the last of the company's iron mills to be started.

Carnegie Steel Plans.

Reports are in circulation of large improvements shortly to be ordered by the Carnegie Steel Company, at Youngstown and at Girard, O., when the company has recently purchased a 400-acre site. Improvements are now under way, as well, that will add to the capacity of the Niles, O., plant. The report is that the company intends building several new finishing mills at Youngstown, and will establish a hot metal route from Niles to these plants.

Rush Orders at Carnegie Mills.

Superintendents and mill managers at the Carnegie Steel Company's plants in Pittsburgh district on October 4 received orders from their chiefs to drive all of the departments to their utmost capacity during the quarter ending December 31. It is said that such a step is necessary to keep pace with the great amount of orders pouring in. Extra efforts to produce a greater output started Monday.

The Duquesne plant of the company went on high-running capacity for a record on October 1, the first day of the new order. The officials of the company have not made any statement of the actual tonnage produced in all of the mills there, but declare that it exceeded the tonnage record of any day in the history of the big plant. The merchant mill at Duquesne is loaded up far beyond its normal output for three months.

INCREASE IN ACTIVE MILLS.

Injunction at New Castle Proves Blow to Tin Mill Strikers.

A sweeping preliminary injunction against the striking tin workers was secured October 6, at New Castle, by the American Sheet & Tin Plate Company. Judge W. E. Porter granted the order after a hearing lasting three days. Arguments will be heard October 19, upon a motion to make the preliminary injunction permanent.

The granting of the application proved a blow to the strikers at New Castle, where the unionists have made their hardest fight.

The combine on October 4 started the Mercer works at Sharon, commonly known as the Bray sheet mill, after an idleness of two years. Five mills are operating at the plant. Notwithstanding the opposition of the unionists, the applications for places by workmen were double what the company needed. The Dresden, O., works is in partial operation. The company is now operating 69 more tin mills than when the strike began. Following is the list of active sheet and tin mills as given out by the company on October 6:

Active sheet mills: Vandergrift, 37; Leechburg, 11; Hyde Park, 6; Saltsburg, 4; Canal Dover, 11; New Philadelphia, 12; Dresden, 3; Guernsey works (Cambridge), 11; Midland works (Muncie, Ind.), 7; Piqua, 7; Old Meadows, 8; Scottdale, 9; Struthers, 6; Wellsville, 10; Woods works, McKeesport, 12; Mercer (at Sharon), 5; Dresden, 3. Total, 158.

Tin mills: American works, (Elwood, Ind.), 20; Cambridge, 7; Chester, 7; United States works (Demmler), 11; Crescent, 6; Monongahela works (Pittsburgh), 8; National works (Monessen), 25; New Castle works, 14; Pennsylvania (New Kensington), 8; Pittsburgh (New Kensington), 8; Sabraton (Morgantown), 10; Sharon, 15; Shenango, 15. Total 154.

The mills operating July 1, when the strike opened, were 113 sheet and 85 tin. At Massillon, O., when the Amalgamated Association endeavored to persuade the workers at the Massillon Rolling mill to join the strike, the men refused to leave their work.

NEW CONSTRUCTION.

Extensions at Furnace Plants.

George J. Hogan, constructing engineer, has opened offices in the Peoples Bank building, Pittsburgh, and is engaged on a number of important improvements. Among the contracts Mr. Hogan has on hand are the construction of three gas producers and three double annealing furnaces for the Thomas Steel Company, Niles, Ohio; one annealing furnace for the Warren Sheet & Iron Company, Warren, Ohio; two faggot heating furnaces in connection with which will be erected two waste heat Wicks boilers for the Sligo Iron & Steel Company, Connellsville, Pa. Other furnaces in the plant are being repaired, and operations will be resumed about November 1.

Mr. Hogan has also about completed the construction of open hearth furnace No. 2 for the Huron Iron & Steel Company, Norwalk, Ohio, which will be put in operation as soon as it is completed.

An Order for Panama.

The Blaw Collapsible Steel Center Company, Pittsburgh, has been awarded a contract for 50 car loads of steel forms to be used in constructing the culverts of the locks and dams of the Panama canal at Gatun. Forms made by this company were used in the construction of 14x34-foot concrete coal mine shaft for the H. C. Frick Coal & Coke Company, at Filbert, Pa. The shaft was sunk 650 feet to a 9-foot vein of coal and an air shaft 13x28 feet of the same construction is also being constructed at the same mine by Contractor W. F. Patterson. The company is also furnishing forms for a sewerage system being constructed at Louisville; Ky., where reinforced concrete sewers up to 15 feet in diameter are being built.

To Make Metallic Castings.

The Universal Flexible Packing Company, with offices in the Farmers Bank building, Pittsburgh, is equipping a plant for the manufacture of its product at 3109 Penn avenue. Plans have been made for the construction of a cupola for the manufacture of metallic castings required, and the company is in the market for lathes, milling machines, motors for driving the machinery and other equipment.

Universal packing is composed of a metallic tube in two parts, with interlocking lugs, to permit of expansion and contraction. The tubes hold soft fibrous packing in place about the rod and are surrounded with the same material inside the stuffing box. Anti-friction metal is used which preserves the rod from scoring, and reduces friction to a minimum. The officers of the company are

I. F. Piersol, president, and F. N. Mason, secretary and treasurer.

"PERMANENT MOULDS."

Pittsburgh Foundrymen Hear an Interesting Address.

Edgar A. Custer, president of the Tacony Iron Company, Philadelphia, was the speaker of the evening at the meeting of the Pittsburgh Foundrymen's Association held in the Carnegie Technical schools, on Monday evening, October 4. "Permanent Moulds" was the subject of Mr. Custer's discussion, and his remarks were illustrated with stereopticon views and moving picture illustrations of the operation of permanent moulds in the plant with which he is connected.

Mr. Custer described the chemical properties of cast iron to be used in various sections when permanent moulds are employed and showed that unskilled labor can produce large quantities of castings, equal to sand mould castings, when permanent moulds used are properly designed.

He stated that it is the practice of his company to use moulds of 100 pounds weight for each pound of casting, and that moulds which had been in use for 15 months are producing as good castings as when they were new; that cast pipe five feet in length was being made with an iron core and that brake shoes and other heavy sections are being turned out in large numbers.

After the address the members of the association went to the foundry department of the school where several permanent moulds were operated under the direction of Mr. Custer and the efficiency of the moulds were demonstrated.

Tanks for Export.

The Petroleum Iron Works, Sharon, Pa., is being operated steadily. Among the installations under way and in course of construction are a number of 60,000-barrel oil tanks, to be shipped to the Isle of Trinidad; a stand pipe 24x100 feet for the McKeesport Tin Plate Company, McKeesport, Pa.; a self supporting steel stack 6x165 feet, for the Page Woven Wire Fence Company, Monessen, Pa.; a 250,000-gallon water tank for the Pittsburgh & Lake Erie Railroad, at Buena Vista, Pa.; a number of 37,000 and 55,000 barrel crude oil tanks, to be shipped to Baltimore, Oklahoma, and points in Illinois, and several riveted tanks, to be shipped to Mexico.

Mining Equipment.

Pittsburgh representatives of the Laidlaw-Dunn-Gordon Company, have been awarded a contract for installing a two-stage air compressor with 16x25x25x15-inch cylinders and an 18-inch stroke for the Taylor Coal & Coke Company, at Losphos, Pa.

NEW EQUIPMENT.

Car Works Machinery.

Among the contracts given by the Standard Steel Car Company, through its engineer, Julian Kennedy, of Pittsburgh, for equipment for its projected plant and slabbing mill at Butler, Pa., are: Morgan Engineering Company, Alliance, O., 34-inch universal slabbing mill, tables, tongs, cranes and auxiliary equipment; Manning, Maxwell & Moore, seven Shaw cranes of 60 tons' capacity and less. The contract for the main power plant for the new works was let some time since to Mackintosh, Hemphill & Company, Pittsburgh. Delivery of the machinery is specified so that operations may begin April 1, 1910.

Air Compressors.

Major H. C. Newcomer, in charge of the United States Engineers' office, Pittsburgh, has awarded a contract to the American Compressor & Pump Company, New York, with offices in the Machesney building, Pittsburgh, for air compressors to operate the machinery of the locks at Dam No. 1, Monongahela river, Pittsburgh. A new power house has been built at the locks in which the compressors and other equipment will be installed.

The contract calls for two compressors with duplex steam and cross-compound air cylinders, each having a capacity of 300 feet of free air per minute at a speed of 125 revolutions, the engines to operate under 100 pounds steam pressure and to develop 100 pounds air pressure. Special inter-coolers and oiling systems were designated.

A contract was also awarded by Major Newcomer to J. M. Bursner, Pittsburgh representative of the Flory Manufacturing Company, Bangor, Pa., for steam hoisting apparatus to be installed on one of the Government derrick boats in the Pittsburgh harbor. The apparatus consists of a 60-horse power boiler, duplex 10x12 inch engines, and a three-drum hoist with swinging gear.

Gas Engines.

J. W. McCartney, Pittsburgh representative of the Bessemer Gas Engine Company, Grove City, Pa., reports that his company has orders for 20 compressors direct driven by gas engines. The following installations of compressors driven by 165-horsepower engines will be made this week:

Hope Natural Gas Company, 4; New York Central Railroad, 2; Oklahoma Gas Company, Guthrie, Okla., 2.

The following sales of gas engines are reported for the month: Lexington Electric Light & Power Company, Lexington, Ohio, 50-horsepower; Hammond Roofing Company, Hyde Park, Pa., 35-

horsepower; Consolidated Lamp & Glass Company, Coraopolis, Pa., 35-horsepower; Consolidated Window Glass Company, Mt. Jewett, Pa., 25-horsepower; C. & C. Coal Company, Hubbard, Ohio, 35-horsepower; Midland Flour Mills, Midland, Ohio, 25-horsepower; Producers & Refiners' Oil Company, Ewing, Pa., 50-horsepower.

Electric Locomotive Hoists.

The Pennsylvania Railroad Company, has placed an order with S. W. Hays Sons, Pittsburgh, for two 70-ton electric locomotive hoists, to be installed in the Southside (Pittsburgh) shops. The motors are wound for 220 volts and the hoists are designed to lift locomotives from their trucks while repairs are being made.

Continuous Oiling Systems.

The Pittsburgh Gage & Supply Company, Pittsburgh, reports the following installations of White Star continuous oiling systems by large power users:

Indiana Steel Company, Gary, Ind.; Republic Iron & Steel Company, Youngstown, O.; the Forstman & Huffman Company, Passaic, N. J.; Barr Clay Company, Streator, Ill.; Buckeye Engine Company, Salem, O.; Peterson Engineering Company, New York; Platt Iron Works, Dayton, O.; Gloucester Electric Company, Gloucester, Mass.; Brown Engineering Company, Reading, Pa.; Acme Coal Mining Company, Greensburg, Pa.; City of Decatur, Decatur, Ill.; American Iron & Steel Manufacturing Company, Reading, Pa.; Michigan Sugar Company, Caro, Mich.; Majestic Collieries Company, Huntington, W. Va.; Hyde Park Gas Company, Scranton, Pa.

Construction Work at Detroit.

The McClintic-Marshall Construction Company, Pittsburgh, was awarded a contract last week for supplying 7,000 tons of structural steel, to be used in the terminal system of the Michigan Central Railroad Company, at Detroit, Mich. Work on the new terminal has been commenced, and when completed it is expected that it will be utilized by most of the railroads centering in Detroit.

Big Viaduct Is Wrecked.

A large section of the viaduct over the New York Central tracks at Buffalo, N. Y., was wrecked by dynamite, October 7.

An unsuccessful attempt was made on the morning of September 14 to destroy the same structure. The viaduct, which was nearing completion, was being constructed by S. J. McCain Company, of Mercer, Pa. The company works on the open shop plan.

To Bridge Beaver River.

Pittsburgh parties were in Elwood City last week negotiating for a franchise for a trolley system on Lawrence

avenue. Representatives of the traction line stated that if the franchise was granted a line would be built to connect Elwood and Beaver Falls, and that a bridge would be constructed across the Beaver river near Rock Point.

A franchise had been granted to the Harmony & New Castle line to lay tracks on Lawrence avenue, but the line was not built and the franchise expired on October 4. The company has asked to have the franchise extended. The matter is in the hands of Burgess Cunningham.

A TALK ON BOILERS.

Engineers Hear Description of New Type, by Erie Man.

Members of the Engineers' Society of Western Pennsylvania, listened to an interesting paper on "A New Type of Water Tube Boiler," by T. H. McGraw, at the regular meeting of the society held October 5, in the Fulton building, Pittsburgh. Mr. McGraw is the Pittsburgh representative of the Erie City Iron Works, Erie, Pa., and the boiler he described is that recently perfected and placed on the market by his company.

The speaker explained that the necessity for high pressure developed the water tube boiler and with stereopticon views illustrated the advantages of this style of boiler over other makes.

The boiler described consists of two drums, one above the other and connected by a number of bent tubes through which the water circulates. The upper drum is somewhat longer than the lower and the extra length is enclosed at either end, forming receptacles for superheating the steam and delivering it dry through a connecting pipe to the exhaust line.

The boiler is enclosed in brick work and the furnace is of the "Dutch Oven" style, with fuel supplied automatically. The heat strikes the front bank of tubing, causing the water to expand and circulate upward into the upper drum, and downward through rear bank of tubes. Baffles control the course of the heat and directing it along the line of tubing. In a three-pass furnace an additional bank of tubes is placed to connect the drums along the center line, giving additional heating surface.

The upper drum is set permanently in an iron frame and the lower drum is suspended, to provide for expansion and contraction without damaging the outer casing of brick. In some cases the brick work is enclosed in a steel packet as a protection from cold air.

A large installation of this make of boilers is being placed in the new plant of the Jones & Laughlin Steel Company, at Aliquippa, and will be operated by waste heat.

AT NEARBY PLANTS.

Suspend Construction at Oakmont.

Work on the new buildings at Oakmont, just out of Pittsburgh, intended for the joint use of the Best Manufacturing Company, of Pittsburgh, and the Crane Company, of Chicago, was suspended October 1, and the engineers of the Crane Company were summoned back to Chicago.

No explanation has been given by either company further than that differences have arisen. The plant at Oakmont represents an investment of \$500,000. Recently the Allegheny County Light Company took the contract to supply power for the plant and had considerable expensive installation in place. The Best Company officials say the investment at Oakmont is entirely by the Crane Company: they have expended nothing on it.

The Crane Manufacturing Company has 38 branches throughout the United States and Canada. Its largest manufacturing plants are in Chicago and Bridgeport, Conn. The company is understood to be so overcrowded with orders that the plants are, and have been for several months, working double turn.

The plant of the Best Manufacturing Company is at Twenty-fifth street and the Allegheny Valley Railroad, Pittsburgh. The company is one of the largest manufacturers of valves and fittings for construction work in the country.

Foundries Plant Starts.

The Sharon, Pa., plant of the American Steel Foundries Company was placed in operation October 9, with sufficient orders on the books to guarantee a long and steady run. The foundries plant has been closed down for two years. Four hundred men are employed.

Molders Get an Increase.

The molders at the plant of the Sharon Foundry Company, at Wheatland, have been granted a voluntary increase in wages effective immediately. The increase restores the scale that was paid prior to the depression in business. About 200 men are affected.

Plants on Double Turn.

H. S. Hunter, Pittsburgh representative of the Chicago Pneumatic Tool Company, reports that sales of pneumatic tools by his company have increased over 30 per cent during the last month and that the plants at Cleveland and Detroit are being operated double turn.

The Steel Car Forge Company is operating its plant at Elwood City double turn. The increase in production being made October 4.

The Shelby Tube Works of the Na-

tional Tube Company, Elwood City, is being operated double turn, with orders in sight to keep the plant busy for six months. The bar mill at the plant is inadequate for the other departments of the mill and the company is buying ingots in the open market.

LOCK BAR PIPE PLANT.

New Jersey Invention to Be Exploited at Sharon.

The Fraser Lock Bar Pipe Company, with offices at 50 Church street, New York, which was recently incorporated in New Jersey with \$500,000 authorized capital, is composed largely of the officials of the Petroleum Iron Works Company, Sharon, Pa., and negotiations are pending for the location of a plant at Sharon for the manufacture of lock bar pipe under the patents controlled by the company.

The officers of the company are: President, C. J. McDowell; vice president, John Fraser; secretary and treasurer, A. W. Krouse; other members of the company are George P. Bard, R. T. McCormick and Thomas Gray.

The American patents for the manufacture of pipe by this method were secured by Mr. Fraser and Mr. Gray, and have been assigned to the new company. The method consists of planing and up-setting the edges of plates, after which the plate is rolled in cylindrical shape and the edges are locked in a grooved bar by being passed through a hydraulic press.

The proposed plant will have a capacity of 1,000 tons a day. Pipe ranging from 16 to 18 inches in diameter will be made. Heavy machinery is being designed which will be electrically driven and all material will be handled by electric magnets.

Mr. Fraser was formerly connected with the East Jersey Pipe Company, Patterson, N. J., which has been manufacturing pipe by this method under European patents. Over 20 miles of this pipe has been installed by the Brooklyn, N. Y., water service and large installations have been made in other sections of the country. It is claimed the pipe offers less resistance to the flow of water than riveted pipe, and that it is much cheaper.

For Independent Line in Texas.

Advices from Galveston, Tex., say that the movement of independent oil operators in Oklahoma to have that state build a pipe line from the Oklahoma fields to the Gulf of Mexico is meeting a hearty response in Texas. The Texas operators say they can raise \$750,000 or more if necessary which they claim will be half the cost for an eight-inch pipe line from the Oklahoma fields to Port

Arthur, Tex., where ample facilities are provided for shipping oil by steamer. The Texas operators already have a right of way for the pipe line through Texas, having started some time ago to build the line, but were unable to secure entrance into the Oklahoma fields.

Large Water Contracts.

Among the pipe contracts secured during the week by the United States Cast Iron Pipe Company were 1,000 tons for the municipal water works system at Cincinnati and 4,000 tons of 24 and 20-inch pipe on a private contract in the West. Massachusetts and New York lettings for good tonnages are due the coming week. On the strength of the increase in business, prices in iron pipe have further strengthened.

Pipe Line Race in Beaver County.

A pipe line race is on between the Harmony Natural Gas Company and the Rochester Glass Company to tap the Scott Ridge gas belt five miles north of Zelienople. After the Harmony company started its line to connect with the American Natural Gas Company's lines at Callery, 13 miles distant, the Rochester company entered the field to run a line to Rochester and the race started. Large forces of men are working night and day on both lines.

Record Crushed Stone Lifts.

Two elevators just sold to the Kelley Island Line & Transport Company, Cleveland, by the C. O. Bartlett & Snow Company, of that city, are believed to be the largest elevators of the kind ever constructed. One is to have a capacity of 10,000 tons of crushed stone an hour, and a second a capacity of 600 tons. Other recent sales by the C. O. Bartlett & Snow Company are: Winding Gulf Colliery Company, Cincinnati, one Greene self-dumping car haul, and complete outfit, through F. C. Greene, mining engineer; capacity 2,500 tons of coal in eight hours; William A. Clark, Butte, Mont., one ore dryer; American Smelters Securities Company, New York City, ore dryer for mines at Santa Barbara, Chih., Mexico.

Concrete Pile Foundations.

The contract for placing concrete piles in the foundations of the buildings to be erected for the Central Bank & Trust Company, at Memphis, Tenn., has been awarded to the Raymond Concrete Pile Company, of New York and Chicago. Murch Brothers Construction Company, contractors; James Gamble Rogers, architect; Gunwald Aus, engineer. The same company was awarded the contract for the piling for the public swimming pool at St. Louis.

ANNUAL MEETINGS.

Crucible Steel Company of America.

According to the annual report made public October 4, the Crucible Steel Company of America, for the year ended August 31, showed net profits available for dividends of \$2,014,826 as compared with a loss of \$520,024 the previous year. Each quarter showed an increase over its predecessor.

The ratio of operating charges to gross receipts was 81.22 per cent as compared with 96.65 in 1908, a reduction of 16.83 per cent. The ratio of net profits available for dividends to gross receipts was 16.61 per cent in comparison with a deficit the former year. Net profits were equivalent to 8.25 per cent on the preferred stock. The report covers the dividends paid since the resumption last March, and expresses the hope that the regular payment of 1 3/4 per cent will be paid for the December quarter.

The total surplus is the largest in the history of the corporation, being \$3,187,999, an increase of \$1,465,104 during the year. It is represented by quick assets built up solely out of operating profits. The tonnage of unfilled orders and contracts on hand at the close of the period covered by the report is 91,498 tons, as compared with 72,984 at the same date in 1908. The tonnage is still slightly below normal, but shows such steady improvement that the outlook cannot but be productive of increased earnings. Current assets on August 31 were valued at \$8,628,914, including \$844,308 in cash, while the current liabilities were reduced to \$1,642,820, showing an excess of current assets of \$6,986,095. The number of preferred stockholders is 3,319 and common 1,413, a total of 4,732.

The balance sheet as of August 31 follows:

Assets—	
Property account	\$45,523,396
Inventories	5,301,951
Taxes and insurance	55,053
Investments	272,044
Bills receivable	81,147
Accounts receivable (less reserve)	2,274,409
Cash	644,308

Total

Liabilities—

Preferred stock	\$24,436,500
Common stock	24,578,400
Purchase money mortgage ...	200,000
Bills payable	758,000
Accounts payable	864,449
Interest and taxes	20,379
Cont. liab. fund	85,000
Fire insurance	51,583
Surplus	3,157,999

Total

Westinghouse Airbrake.

Three well-known bankers were last week added to the directorate of the

Westinghouse Air Brake Company at the annual meeting. They are Henry C. Bughman, president of the Second National Bank of Pittsburgh; Charles McKnight, president of the National Bank of Western Pennsylvania, and Horace E. Smith of the banking house of Charles Smith & Sons, of Philadelphia.

The additions were made at the annual meeting of the Air Brake Company held at the general offices in Wilmerding. Of the 280,000 shares of stock, 169,899 were voted.

Other directors elected are: George Westinghouse, president; John Caldwell, E. M. Herr, H. G. Prout, George C. Smith and H. H. Westinghouse.

Though its business has been improving since the first of the year, the gains have not been sufficient to overcome the losses incurred by the Westinghouse Air Brake Company during the early months of the fiscal year ended July 31, 1909, covered by its annual report. The decreases have been due to economies in maintenance of its customers, the railroads of the country. Net sales amounted to \$5,286,021, a decrease of \$21,995 and the net earnings were \$2,039,273, a loss of \$24,517, as compared with the previous year.

The surplus for the year applicable for dividends was \$1,920,557, equal to 13.71 per cent on the capital, a decrease of \$50,238. Dividends were reduced by \$412,629, and a net surplus of \$546,076 was carried forward, as compared with \$183,686 in 1908. The profit and loss surplus at the end of the year was \$5,457,750, including \$2,757,367 cash on hand. This is the largest cash balance carried over in the company's history.

EASTERN MACHINERY NOTES.

The Gurney Ball Bearing Company, of Jamestown, N. Y., has been incorporated with a capital of \$500,000, to manufacture machinery, etc.

The Seaboard Steel Casting Company, of Chester, Pa., is planning an addition to its plant there.

Reports from New York say the Flat Automobile Company has been the largest purchaser of machinery among such interests, buying liberally equipment for its new plant at Poughkeepsie, N. Y.

The National Conduit & Cable Company is adding more equipment to its plant at Hastings.

It is reported that the American Electric Tool Company, of Petersburg, Va., which was recently organized, is planning a plant that will cost about \$100,000.

The purchase by the Union Pacific of 180 acres of land at La Salle, Col., is said to be preliminary to the erection of shops for the building of steel sleeping cars.

Contracts for New Mills in Alabama; Pittsburgh District Gets Liberal Slice

EQUIPMENT LETTINGS CLOSED FOR MOST OF THE WORK ON SOUTHERN IRON & STEEL COM- PANY EXTENSIONS — BLAST FURNACE WORK IN SOUTH.

The letting of contracts has been announced for structural work and much of the equipment for the new wire, rod and nail mills at Alabama City, Ala., to be erected by the Southern Iron & Steel Company. Following is a partial list:

For 100-ton ladle crane, ingot stripper, charging machine and 10-ton crane, to Alliance Machine Company, Alliance, O.; removal from Ensley and re-erection of old rod mill building, new buildings for wire, rod and nail mills, warehouses, etc., McClintic-Marshall Construction Company, Pittsburgh; 5,000-horsepower cross-compound blowing engine for rod mill, Allis-Chalmers Company, Milwaukee; generator, motors, telferage system, electrical supplies, etc., for equipment to drive wire and nail mill by electricity, Crocker-Wheeler Company, Ampere, N. J.; construction of steel-frame coopeage shop and steel-frame diphouse, McCune Iron Company, Birmingham, Ala.; erection of 4040-horsepower Stirling type water-tube boilers, Babcock & Wilcox Company, New York; 5,000-horsepower heater and purifier for rod mill, Harrison Safety Boiler Works, Philadelphia; two 14½x26½x21 cross-compound direct-connected engines for electric plant, Buckeye Engine Company, Salem, O.; three continuous reheating furnaces, Alexander Laughlin & Company, Pittsburgh; more than 100 wire nail machines, National Machinery Company, Tiffin, O.; wire-drawing machinery, Humphrey & Son, Joliet, Ill.

The Southern has partly re-lined its blast furnace at Alabama City and will be ready to blow in November 1, but the product will not be needed until the steel plant is ready to resume. The company is constructing new haulage systems at the furnace, and plans are being executed for erection of Nos. 5 and 6 open-hearth steel furnaces, for which foundations and materials were ready. Furnaces No. 1, 2, 3 and 4 are being completely overhauled. The company's Trussville stack will go in blast October 20.

More furnaces will go in blast in the south before the end of the month. The Sheffield Coal & Iron Company's No. 2 stack, at Sheffield, will go in this week; and the Chattanooga furnace of the Southern Iron & Steel, which has been re-lined, will go in October 25.

Boston "Steel Cases."

Lawyers and judges have dragged themselves through the third week of the trial of the 30 defendants in the famous Boston agreement cases on charges of collusive bidding. City Engineer F. H. Fay was on the stand four days. He

testified that he had no knowledge of any combination among the steel manufacturers before the investigation by the Finance Commission. It was this investigation which resulted in the indictments by the grand jury.

READY FOR A FIGHT.

National Fireproofing to Enter Lists Against Croker Company.

Wall street authorities last week interpreted the action of the National Fireproofing Company, in passing its regular dividend at the Pittsburgh meeting, as a promise of a campaign supported by a general conservation of finances, to capture its share of building business in New York. The passing of the dividend is in line with the general policy adopted since the fight with the Croker Fireproofing Company in New York city began.

Since the competition between the two companies for the heavy contracts of New York became an issue in New York politics, resulting finally in a competitive test, the National company has been active with preparations for the final struggle. That it does not intend to step aside and permit the Croker company to absorb the business of the East is shown by the activity at all the plants and in its main office. A general retrenchment policy is said to have been put in force, with a view to carrying on a hard campaign for business.

Congressman William H. Graham resigned last week as director. His place was filled by the election of John H. Jones, of the Pittsburgh-Buffalo Company.

In Market for Canal Boats.

The New York, Buffalo & Great Lakes Transportation Company, incorporated in New York last summer with \$250,000 capital stock, has completed its organization. The company will operate between New York City and Buffalo, by way of the Hudson River and the Erie Canal, a line of canal boats of the same length and beam as those now in use, but of increased draft. The company has before it plans for steel canal barges.

'Phone Supply Companies Merge.

A combination has been made of the two companies, the Kellogg Switchboard Supply Company and the Dean Electric Company, both of Elyria, O., that will practically control the manufacture of telephones and switchboards for the independent telephone companies of the

country. W. W. Dean is president of the combination. The new concern will be known as the Kellogg-Dean Electric Company and will operate both the plants at Elyria and Chicago.

STEEL FOR PANAMA.

Maj. W. L. Sibert Says Specifications Will Be Out Soon.

Maj. W. L. Sibert, U. S. A., formerly in charge of river improvements for the upper Ohio, now member of the Panama Canal Commission, while visiting in Pittsburgh last week was quoted as follows:

Work on the canal is progressing faster than the scheduled rate. We hope to discount the time of completing the canal, which was fixed for January 1, 1915. Masonry is being placed in the locks at Gatun, on the Atlantic side of the isthmus; also at Pedro Miguel, on the Pacific side.

The building of the big dam at Gatun is advancing rapidly. All the plans for work are now settled, the plant all purchased, necessary funds are available, and plain sailing is anticipated until the Canal is finished. The big steel contracts for the gates are still to be let. The specifications for these should be out within the next six months. The specifications for the electrical operating machinery for the locks and dams will likely be ready for advertisement within a year.

There has not been a case of yellow fever on the isthmus in about four years. The sanitary conditions generally are perfect. Colonel Gongas, commissioner in charge of the sanitary department, has certainly demonstrated the fact that it is possible to make the tropics hospitable for white men.

The men connected with the canal are all appreciating that they are on the last stretch and are working with zeal for the finish.

Major Sibert left the last of the week for Alabama, on business connected with the canal. On his return to Pittsburgh Major Sibert will remain about 10 days before returning to Panama.

Boosting New Car Seal.

O. L. Hubbard, of Chicago, inventor of a new car seal which has been indorsed by Pennsylvania and New York Central officials, was in Pittsburgh last week conferring with railroad officials. It is said he received from the Pennsylvania a contract for 100,000 of the new seals a week, for the Lines West.

Inspect Hanna Furnaces.

A party of officials of M. A. Hanna & Company, of Cleveland, headed by Dan Hanna, inspected the company's properties in the Shenango valley during the week.

Double Time at Engineering Works.

The Standard Engineering Works, at Ellwood City, Pa., went on double turn last week. About 300 men are employed. The company has enough orders on

hand and in prospect to insure a steady run for the coming winter and spring. The company is building a bar mill for the Clairton plant of the Carnegie Steel Company, and in addition has the contract for the Jones & Laughlin mills at Aliquippa. The work has been in progress on this latter contract for some time. The company has several contracts for pipe threading machines from Pacific coast concerns.

LARGEST DOCK ON LAKES.

Chicago & Northwestern will Build it at Escanaba.

Specifications, just announced, for the new ore dock of the Chicago & Northwestern at Escanaba, Mich., confirm the report that the new structure will be the longest ore dock in the world.

The new dock, which take the place of No. 5 dock, which collapsed last spring, will have 400 pockets and the dock proper will be 2,400 feet in length. The new structure will be 52 feet wide, the top of the pockets 72 feet above the water, and the length of the spouts 32 feet.

The only dock on the great lakes approaching in size the proposed new structure is No. 4 Missabe dock at Duluth, which has 384 pockets, is 72 feet high, 57 feet wide and is 2,304 feet long.

The largest dock at Escanaba at present is the Northwestern No. 6 dock, which has 320 pockets, 70 feet high, 50 feet wide, and 1,920 feet long. The new dock will have 80 more pockets than No. 6. The contract for the new structure will be awarded with the definite understanding that the dock shall be completed and ready for placing in commission by May 1.

New Implement Plant.

The Joseph D. Manley Implement Company has bought a site in St. Louis for a \$125,000 factory. Joseph D. Manley, president of the company, says the plans for the property have not been worked out completely as yet, but he will expend at least \$125,000 on it, independent of the cost of machinery. The buildings will be of brick and stone, and the equipment will be modern in every respect.

New Industry for Dapton, O.

The C. W. Raymond Company, of Dayton, O., has acquired the Horton Manufacturing Company, of Painesville, O., capitalized at \$100,000, and will transfer the business of the concern, which manufactures brick-making machinery, to this city. Buildings covering several acres will be abandoned and a new structure erected in Dayton, the Raymond Company giving employment to 200 more workmen.

JAPS LOOK INTO PRICES.

Junketing Party Passes Out of Ohio Into New York.

After spending several days at Detroit and Cleveland, the Japanese trade commission jumped to New York last week, on its tour of the country. After four weeks in the East, the party is due in Pittsburgh enroute west again on November 5.

Baron Shibusawa, the most prominent banker and shipbuilder of Japan, heads the delegation of commercial commissioners. At Cleveland a few of the party took hurried trips through many factories, but most of the time was spent with the heads of firms discussing prices and shipping facilities between Japan and the United States. The Youngstown (O.) Chamber of Commerce wired the commission an urgent invitation to visit that city, but it was found impossible to change the itinerary so as to make such a stop. The members of the party representing Japanese industrial interests are:

H. Hibiya, Tokyo, president of Kanezafuchi Cotton Spinning Company; K. Neju, Tokyo, member of parliament, president Tobu Railway Company; B. Oi, Osaka, member of parliament, president of Tokyo Sulphuric Acid Company; S. Satakes, Tokyo, member of parliament, president of Tokyo Electric Light Company; E. Fujiye, Kyoto, director of ceramic experimental station; T. Kadado, Nazoya, car manufacturer; T. Wataso, Tokyo, implement manufacturer.

Foundry Company Reorganizes.

Announcements are being sent out by the Brazil (Ind.) Machine & Foundry Company, whose literature announces that they will make a specialty of clay-working machinery. The company was formerly known as the Adrian Brick & Tile Machine Company, Adrian, Mich., and later as the Ideal Wire Fence Company. The stockholders of this company were recently induced to remove their entire plant and equipment to Brazil, Ind., where the citizens provided them with ample facilities for carrying on their business in a more extensive manner than was possible at the old location. The buildings occupied were formerly used for the manufacture of bolts and nuts, and are especially suitable for a plant of this kind.

Railroads in Market for Tools.

Large inquiries have been received by machine tool manufacturers from the Pennsylvania Railroad and the Baltimore & Ohio, for machinery for shop additions now under way. The New York Central, which has been an active buyer of equipment, is out with an inquiry

for traveling cranes and tools. The new Virginian Railroad also inquired for an amount of tools. The demand placed upon railway equipment companies by the railroads has brought the former into the market for additional machinery.

ELECTRIC COMPANY PACT.

Westinghouse and General Electric Said to be Negotiating.

It was reported in New York last week that the Westinghouse Electric & Manufacturing Company and the General Electric Company are working upon a new agreement, which will bring them into much closer trade relations than have existed. The present patent agreement, which was formed in 1896, expires in 1911. It is said that the new agreement provides for an interchange of licenses so far as patents are concerned. No confirmation of the report could be secured in Pittsburgh.

In United States Circuit Court in New York, last week, Judge Ray sustained the charges of Murray Corrington and the Corrington Air Brake Company against the Westinghouse Air Brake Company, contending infringement on a patent granted June 14, 1904, "for improvements in fluid-pressure brake mechanism for the better control of railway vehicles by the engineer in charge of a train." The Westinghouse Company argued that its apparatus did not infringe that of the plaintiffs because the essential features of the latter were "anticipated by prior knowledge and use, and prior patents and publication."

"I am constrained to hold that the claims of the patent in suit are valid and infringed, and there will be a decree accordingly and for an accounting with costs," said Judge Ray, in closing his opinion.

Delaware's New Capitol.

Of 14 competing architects, E. L. Tilton, of New York, was awarded first prize and engaged as State architect by the Delaware Capitol Building Commission, at Dover, last week.

The Tilton plans provided for a modern and spacious fireproof library building and the older members of the commission, including former Governors Trunnel and Lee, favored this rather than a more pretentious State house. Work on the new administrative building will be started after a meeting of the commission this week with the new architect.

D. & H. Buys Six Locomotives.

The Delaware & Hudson has placed an order with the American Locomotive Company for six Mallet compound locomotives, weighing 440,000 pounds each.

Report On Electric Production of Pig Iron in Sweden.

M. Lars Yngstrom, director of the Domnarfvet Iron Works, in Sweden, at a recent meeting in Stockholm, gave some interesting information about the experiments for some time carried on at Domnarfvet with reference to electric production of pig iron, about which hitherto nothing had been allowed to become public.

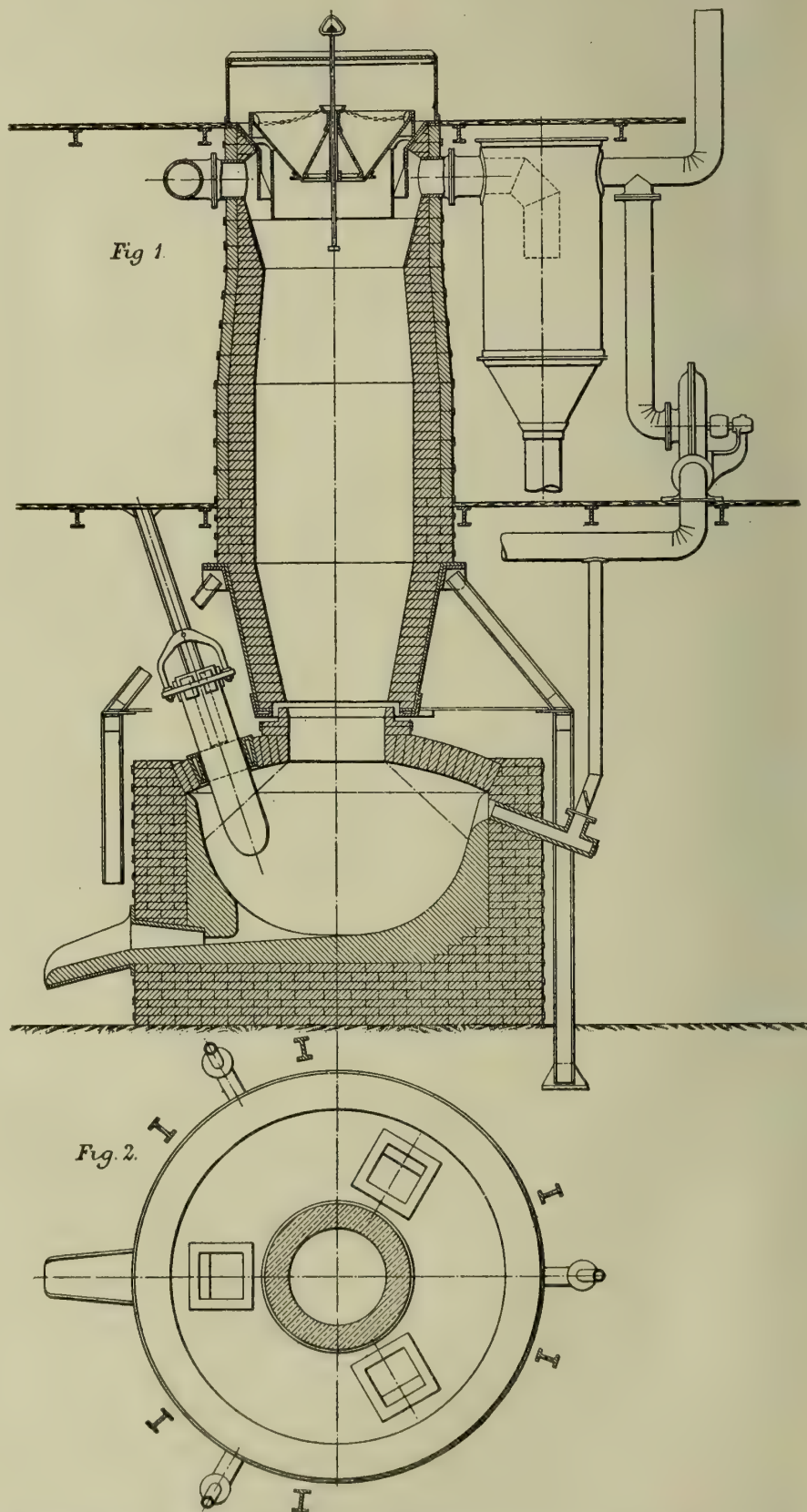
In the course of the year 1906 an agreement was entered upon between the Elektrometal Company, the Grangesberg Company, and Stora Kopparberg Bergslags, to which latter the Domnarfvet Iron Works belong, as to carrying on, jointly, experiments in electric production of pig iron in a blast furnace constructed by the three Swedish engineers—MM. Gronwall, Lindblad, and Stalhane. This was originally constructed as an induction furnace, but subsequently transformed into a resistance furnace. Having for some time experimented with different modifications of this furnace, the Elektrometal Company constructed the furnace now in use at Domnarfvet, upon which the experience gained was brought to bear.

This furnace is of the form shown in the annexed diagram. At the bottom of the furnace there is a joint outlet for pig iron and slag. The electric current—three-phase alternating—is led into the furnace by means of three carbon electrodes, proceeding into the lower portion of the furnace through water-cooled stuffing-boxes fixed in the arch of the furnaces. The voltage at the experiments now going on is about 40 volts. The current is 8,000 to 9,500 amperes, and the load 480 to 500 kilowatts. In order to protect the arch of the furnace against the high temperature produced by the electric current, blast-furnace gas, drawn by a fan from the upper part of the furnace, is blown in under the arch, so that the cooling is done by means of neutral gas, which arrangement has proved very efficient.

The furnace is started and worked in the same way as an ordinary blast-furnace. The present charge consists of 100 kilogrammes Grangesberg unroasted red hematite with about 60 per cent iron, three kilogrammes roasted lime, and 18 kilogrammes coke. This, according to calculations, corresponds with about 295 kilogrammes of coke per ton of pig iron. In the experiments now going on, only coke has so far been used, but the plan is to use charcoal, prime ore briquettes and "slig." Experiments have proved that charcoal can be used just as well as coke.

As far as the product from the electrical blast furnace is concerned, a per-

centage of carbon similar to that of steel has been attained in some cases. As a rule, however, pig iron has been produced. Experience will have to show



Electric Blast Furnace at Domnarfoet, Sweden—Reproduced from London "Engineering."

which is the more advantageous to produce. It will probably prove profitable to combine an electric blast-furnace with an electric refining furnace. During the present experiments the percentage of carbon has averaged somewhere about 3.20 per cent. The percentage of silicon, as a rule, varied from 0.2 to 0.07 per cent, but has also been higher, in one case even 4.40 per cent. The percentage of sulphur has in grey pig iron been as little as under 0.005 per cent, with 0.5 per cent sulphur in the coke used.

So far rather more than two tons have been obtained per electrical horsepower year, but there is reason to expect that if more power is used in the present furnace, its thermal efficiency will improve, so that about three tons can be obtained per electrical horsepower year.

The tests and experiments in connection with this furnace have given rise to large projects at different places in Sweden where a sufficiency of water-power is available. But before these assume any definite shape a still further exhaustive practical testing of the method is considered advisable. A company has been formed for the exploitation of the Gronwall method at the Trollhattan Falls, and the names of the men interested in this concern are a guarantee that the process is possessed of considerable practical merits. No installations on a large scale will, it is understood, be taken in hand until all the details have been fully worked out. It has now been proposed that the Jarnkoutvret, an institution in Stockholm of the highest possible repute, working in the interests of Swedish ironmasters, should on its own account carry out the necessary final experiments, so as to arrive at the speediest possible practical solution of the problem. It would, no doubt, prove a most satisfactory solution in more ways than one; in the first place, the authority of the Jarnkoutvret (the Iron Office) is absolute; and, secondly, an arrangement of this kind would no doubt reserve for its members certain advantages in connection with the exploitation of the invention. Negotiations are at present being carried on between the Jarnkoutvret and the patentees, the results of which are being eagerly looked for in many quarters.

Canadian Bill of Lading.

The Canadian Railway Commission, on a petition of shippers, has ordered a new bill of lading to be used which makes railways responsible for negligence in transport or delivery and the initial carrier is responsible for the goods to destination, even if they go via other Canadian railways or if handled by United States roads with which there is a joint traffic agreement.

Plants in New Hands.

BUSINESS REVIVAL INSPIRES PLANS FOR PURCHASE AND OPERATION OF IDLE PROPERTIES.

Shoustown Plant Bought In.

J. P. Koeler & Company, dealers in iron and steel, 2918 Penn avenue, Pittsburgh, on October 4 purchased the plant of the Refined Iron & Steel Company, situated in Crescent Township, on the Pittsburgh & Lake Erie Railroad, about 10 miles west of Pittsburgh. The plant was sold at receiver's sale by Meyer Streng, receiver, subject to confirmation of the Court, for \$100 above the bonded indebtedness, which amounted to \$150,000.

The plant is modern in construction and equipment, and had been in operation about 18 months when the company suspended. The equipment consists of 7 double puddling furnaces, 3 pile furnaces, 4 trains of rolls, one 22-inch muck, 9-inch and 12-inch finishing, and 16-inch billet and finishing, two 1,000 horsepower Hamilton-Corlis engines, and 10 other engines; electric conveyor, three Epping-Carpenter pumps, and a well equipped machine shop. The annual capacity is 25,000 tons of much bar and merchant iron.

The purchaser states that the plant will be put in operation as soon after confirmation of sale is made as possible, and that the line of product made by the former owners will be followed.

Pope Company Gets Shelby Plant.

The consummation of a deal whereby the Pope Manufacturing Company, of Hartford, Conn., has acquired the Hartford plant of the Shelby Seamless Tube Company, an affiliated concern of the National Tube Company, became public last week. According to W. B. Schiller, president of the National Tube Company, the deal was closed about a month ago, and the plant has been taken over by the Pope Company.

Tubes of the best quality were manufactured at the Hartford plant, and the acquisition is considered a good one for the Pope Manufacturing Company. The plant is one of the smaller ones owned by the National Company, and is said to have been worth \$250,000.

Pipe Plant Goes to Chicagoan.

Deeds were filed with the County Clerk at Newport, Ky., last week, by which the United States Cast Iron Pipe & Foundry Company transfers all of its real estate holdings in Newport, consisting of 27 lots and the buildings thereon, in consideration of \$1, to Edward C. Maher, room 1400, First National Bank building, Chicago, Ill. The property transferred is the largest manufacturing plant in Newport, and has been

idle for many years following the absorption of the Addyston Pipe Works by the United States Cast Iron Pipe Corporation. Mr. Maher refused to reveal his plans.

Ohioans Buy Eastern Furnace.

Youngstown, O., men have arranged to take over the blast furnace of the Chester Iron & Steel Company at Chester, Pa., and operate the stock. The furnace was built a few years ago by eastern capitalists when financial troubles came on and the property fell into the hands of a receiver.

Charles Hart, who has charge of the plant of the Coatesville Iron Company at Coatesville, Pa., was asked to look over the property at Chester by the receiver for the purpose of securing a true estimate of its value. It is said that Mr. Hart immediately arranged for its purchase. Associated with him in the venture will be Myron Wick and Robert McCurdy, of Youngstown, according to reports from that city.

Mr. Hart is a stockholder in the United Iron & Steel Company, operating furnaces at Leetonia, O., and Middlesex, Pa.

To Force Sale of Enamel Plant.

A creditors' petition in bankruptcy has been filed in the Pittsburgh courts against the Pittsburgh Elastic Enamel Company, of Sharpsville, Mercer county. The Canonsburg Iron & Steel Company, of Pittsburgh, claims \$3,398.32. Two other firms have smaller accounts. Sharon stockholders of the concern say the corporation is perfectly solvent. Frank Pierce, of Sharpsville, has been recommended for receiver. The plant has been idle for the last four months.

Proceedings were halted by the appearance of the Sinkell-Hachmeister Chemical Company, of Pittsburgh, in court with an injunction to restrain attempt to force the plant to sale. Opponents of the bankruptcy proceedings assert that machinery of the company and other appurtenances of the plant are worth \$75,000, and as far as can be learned the indebtedness amounts to only \$9,000.

Sand Company Changes Hands.

Press reports from Cumberland, Md., note the sale of the White Rock Sand Company's property between Oakland and Terro Alta, W. Va., to West Virginia and Pennsylvania capitalists for \$150,000. It includes 300 acres of glass sand. It is understood a new company will be formed by the purchasers and a

new mill erected to carry on the work more extensively.

Deal for Lear Auto Works.

E. S. Kelly, former rubber tire king, is to purchase the Oscar Lear Automobile Company, according to information sent out from Springfield, O. The company is in the hands of a receiver. Its assets, as given to the court, amount to \$155,177. The real estate is valued at \$18,000, and the machinery at \$49,480.

Absorb Massachusetts Plant.

The Lakeside Forge & Wrench Company, of Springfield, Mass., announces that it has acquired the plant of The Springfield Drop Forge Company, at Springfield, Mass., and begun operations with a full force of men September 27. Eugene Childs, formerly connected with the Trimont Manufacturing Company, of Roxbury, Mass., will be president and general manager of the newly organized company.

Business Troubles.

At Indianapolis, suit for a receiver for the Yawger Construction Company has been filed by George W. Chandler, a stockholder. According to Chandler the company's assets amount to more than \$79,000 and it has debts outstanding amounting to \$68,297.47. The company is constructing a railroad bridge across the Illinois River at Peoria. Chandler asks the Court to instruct the receiver to proceed with the work the company has planned.

In U. S. Courts at Pittsburgh, the Kidd Brothers & Burgher Steel Company, of Aliquippa, are defendants in a creditor action in bankruptcy filed by the Independent Steel & Wire Company, of Pittsburgh, and others, with claims of \$25,116.

Judge Brady, of the New York Supreme Court, has appointed Ralph D. Mershon receiver for the Combustion Utilities Company, gas specialties, of No. 60 Wall street, New York, with a bond of \$1,000, in proceedings for the voluntary dissolution of the corporation brought by the directors. The liabilities are \$528,034, of which \$450,000 is an issue of bonds, and assets are \$1,009, consisting of 10 patents nominally valued at \$100 each. The company is a New York corporation, incorporated on September 14, 1905, with capital stock of \$1,000,000, to sell shop rights and royalty licenses for the different processes which the company controlled by patents.

A creditors' petition was filed in United States court at Pittsburgh, by the Petroleum Iron Works Company, of Sharon, Pa., and others against the International Construction Company, of Pittsburgh. Their claims aggregate \$10,747.13.

Big Companies in South Cautious on Sales for 1910.

BIRMINGHAM—The iron market has hardened at \$15, the level to which the Alabama Consolidated advanced about the 20 of September, and which the other iron makers followed little later. Inquiries at the office of the Sloss-Sheffield elicited the information that this company was selling nothing under \$15, that it had no more iron for this year's delivery, that it was not taking orders for the second quarter of 1910, and that it was limiting orders accepted at \$15 for the first quarter of 1910. Each 1910 customer is given less iron than he would like to have at present prices.

This company's six active furnaces are working finely and the only idle one at Florence is in prime shape for operation.

It has been discovered that large consumers are among those who bought iron at the \$11 to \$12 level, and stored it in the furnace yards in Birmingham. These concerns are largely in the foundry business and have cleaned up a nice profit. Stocks on the yards are still large, purchases having been made before operations were resumed. The Sloss-Sheffield Company reports the sale of twice its make in September. The make is 35,000 tons.

The Alabama Consolidated, which has a monthly output of about 12,000 tons, booked a tonnage of 32,000 in September, or twice the amount sold in August and July. The three months' sales of this company will foot up 65,000 tons, or something like a five-months' make. The Alabama Consolidated has made sales in New England of Etowah iron at \$15, and it is getting \$16 for the Clifton brand. The iron makers are in better physical shape than they have ever been. The result is more high grade iron that was ever made. All during the summer low grades were so scarce as to command the price of the higher grades.

There is going to be a car shortage. The Louisville & Nashville, the Frisco and other systems have already issued orders, confining their cars to their own lines. The incoming activity in coal movements will superinduce a shortage. The Sloss-Sheffield and the Tennessee Company have booked to their capacity of spare coal and are taking no more orders. This opens the field for the commercial operators, who are seeing daylight for the first time in 18 months.

Owing to a scarcity of labor and delays in securing materials needed in the repair of plants, it will be along in the early part of November before the Southern Steel will have resumed at the steel mill in Gadsden, but some of the blast furnaces will go in this month.

It is reported from Trussville that the stack there ought to be making pig iron in three weeks. The Republic and Birmingham Coal & Iron will soon have another stack going.

The Tennessee Company, after buying \$1,000,000 worth of land near Ensley during the summer for its water works system, by-product coke ovens, and railway extensions, has made additional purchases in the past two weeks.

The Standard Iron & Fuel Company announces that it has fully arranged for the erection of a \$400,000 by-product coke plant at Bessemer, adjacent to the United States Cast Iron Pipe Company and the Tennessee Company. Dr. G. B. Crowe, a large coal operator, is at the head of this concern.

Small foundrymen have become very busy owing to the demand for brasses by furnaces and railroads and repair work in every direction.

PERSONALS.

Thomas W. Rowlands, one of the younger steel men of Pittsburgh, was elected secretary by the board of directors of the Crucible Steel Company, filling the vacancy caused by the death of Alexander Thomas, who died while abroad some months ago.

Mr. Rowlands is a Pittsburgh boy. He began as a stenographer with the Hartje Paper Company. After a year's service he went to Col. E. E. Zeigler, freight agent of the Pennsylvania railroad at the old Duquesne station as private secretary. Two years of training there brought him the appointment of private secretary to Assistant Freight Traffic Manager James P. Orr, of the Pennsylvania, where he remained four years. He was then appointed assistant to Secretary Alexander Thomas, of the Crucible Steel Company, and after three years in that position was made assistant secretary of the company.

Since the death of Mr. Thomas, Mr. Rowlands has performed the duties of secretary of the company. His promotion came seven years, almost to the day, of his first entering the company's employ, for he began his career with the Crucible Steel Company on October 1, 1902.

✓

Charles C. Henderson, formerly treasurer and general manager of the Reliance tube works, has been appointed general manager of the Allegheny steel company, at Brackenridge, Pa., the latter company purchasing the proptrey of the former recently.

✓

H. L. Schneider, of the Van Dorn Electric & Manufacturing Company, Cleveland, Ohio, was in Pittsburgh last week in the interest of his company.

New Reduction Gear for the Marine Turbine.

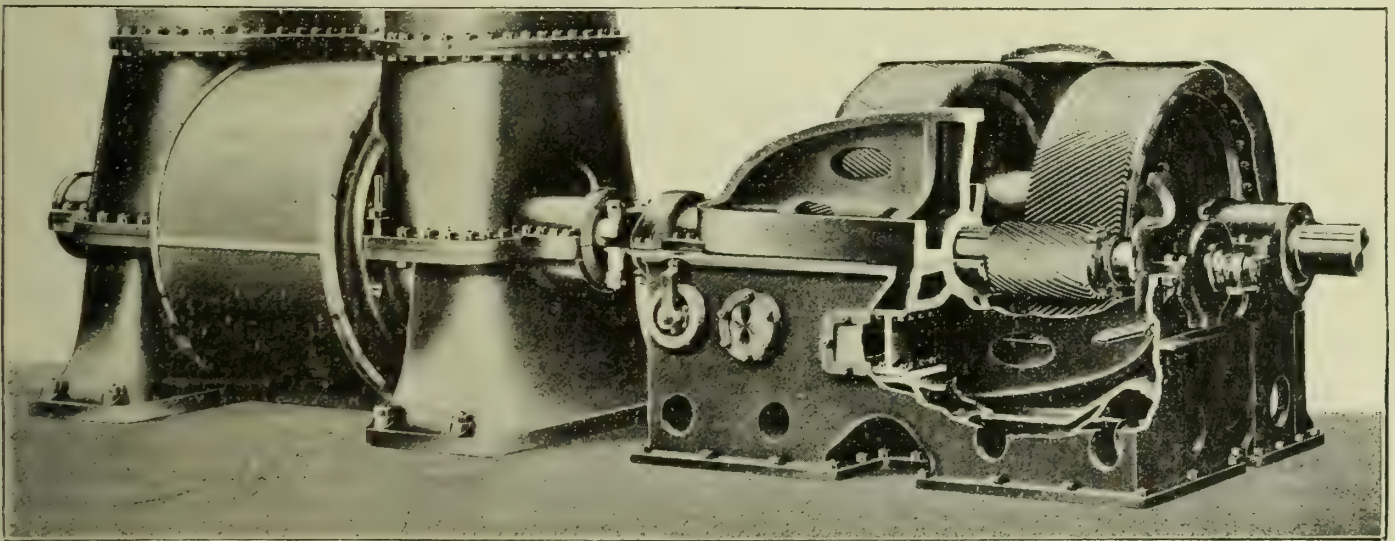
REPRESENTATIVES of the Navy Department were at the Westinghouse shops at East Pittsburgh all last week, watching the tests of the new reduction gear for marine turbines, which is expected to revolutionize ocean craft by reducing weight of engine-room equipment. Recently a representative of the British Government visited the shops and looked over the models to make a report to the British navy.

The tests of the new invention of Rear Admiral George W. Melville, retired, U. S. N., and John H. McAlpine, which are being made under the personal supervision of Mr. Westinghouse, are attracting attention of engineers and shipbuilders in two hemispheres. The question of gearing a turbine, instead of hitching

ling: The straightforward solution of the problem by means of a pinion and a spur wheel, says "Engineering" in a review of the Melville-McAlpine invention, has generally been dismissed as impracticable, though the remarkable efficiency of a well-constructed toothed-wheel drive is known to all. The waste of energy in such a transmission gear is notably less than is commercially practicable with an electric coupling, which in turn is superior in this respect to any hydraulic attachment. In a series of lectures in London last spring, Gerald Stoney, the British engineer, suggested that the new alloy steels and the greater accuracy of workmanship, which have been so successful in automobile practice, held out a prospect that the problem of the marine steam turbine

are at an angle of 30 degrees with the axis of the shaft. The diameter of the pitch circle of the large wheels is about 70 inches, and of the pinions 14 inches. Details of the gear-box have been designed after a comprehensive study of the circumstances which tend to interfere with the proper working of very broad teeth. A small pitch was deemed essential if a reasonable absence of noise was to be secured, and this necessarily meant broad teeth, in view of the fact that 6,000 horsepower was to be transmitted with a pitch-line speed of very nearly 100 feet per second, and with a limiting pressure of 453 pounds per lineal inch on the teeth.

The vital feature of the entire problem, as seen by Messrs. Melville, McAlpine and Westinghouse, lies in the



New Melville-McAlpine Turbine, a Part of Gearing Exposed.

it direct, has vexed all engineers for years, troubled them, in fact, ever since Charles A. Parsons astonished the world with his wonderful boat, *Turbinia*, in 1897.

The difficulty met in marine practice in gearing up the high speed turbine is that gearing for great powers must run perfectly true. If run at slow speed it would be too big; if run at high speed—high turbine speed—it would tear itself to pieces if there occurred an error in alignment of one-thousandth, or perhaps one two-thousandth of an inch.

Means of interpolating some form of reduction gear between the marine turbine and the propeller have been suggested in the form of electrical or hydraulic means, and according to information secured by London "Engineering," tests are now on trial which promise remarkable results from a hydraulic coup-

might be solved by means of ordinary toothed reduction gearing.

Mr. Westinghouse, however, has now undertaken to put to the test an entirely new conception in gearing originated by Messrs. Melville and McAlpine. He has had constructed a double-helical spur gear intended to transmit 6,000 horsepower at 1,500 revolutions of the pinion per minute, the reduction ratio being 5 to 1. The accompanying illustration shows a perspective view of the gear, with the casing partly broken away, coupled to a Westinghouse double-flow turbine. The forgings for the gears were made by Krupps, at Essen; and the standing parts were made by the Westinghouse Machine Company.

The pinions have 35 teeth each, and the spur wheels 176, a hunting-cog being introduced to equalize wear. The pitch is $1\frac{1}{4}$ inch, and the pitch helices

next step—the mounting of the shaft to connect with the spirally-constructed teeth. The inventors evolved the plan of mounting the pinion shaft in a device which they have dubbed a "floating frame," the object of which is to cause the alignment and position of this shaft to be controlled wholly by the interaction of the teeth in contact, and not by the greater or lesser skill of the workman in laying out and fitting the bearings, which, moreover, even if exactly right to start with, could not be depended on to maintain permanently their alignment. The "floating frame," is a heavy steel casting flexibly mounted in the gear-box, and supporting in rigid bearings the pinion shaft, but in such a way as to allow of this shaft having a slight longitudinal freedom, so that it can slide axially to and fro within the frame. The floating frame is made very

deep vertically, so as to be exceedingly stiff to withstand deflection by the nearly vertical forces at the bearings. It is also amply stiffened in the horizontal plane to obviate deflection from the weaker horizontal forces.

The pinion has perfect freedom of longitudinal movement in its bearings. Further, the pinion is driven by a shaft, which passes completely through it to the end distant from the coupling, where it is keyed and bolted. This shaft is so flexible that it imposes practically no constraint on the pinion and floating frame. It is evident, therefore, that, both as to its longitudinal position in the floating frame and in the angular position of its axis, the pinion is solely under the control of the forces transmitted by the teeth of the large gear.

The strength of both pinion and floating frame are far in excess of that requisite to sustain the maximum forces to which they will be subject, and their dimensions were made such as to give ample rigidity. For instance, under full load the flexure of the cast-steel floating frame in the vertical plane is so slight that the end bearings will be lowered relatively to the center by not more than 1-2000 inch.

Involute teeth have been used, as they give excellent results. But they have also the well-known property that if, through wear of the bearings or errors in the original setting up, the axes are somewhat farther apart than designed, the teeth still run true, and there is no "opening of contact." This does not hold with any other form of teeth.

The only condition which could cause serious disturbance of the tooth pressures is an excessive heating of the pinion above the temperature of the gear. But the design provides for a copious application of lubricating and cooling oil, especially to the pinion, which has most tendency to heat. The cover, also, is so arranged as to draw in air at the ends by the fan action of the gears. Besides, water can be circulated between the pinion and the flexible shaft. But it is not anticipated that the heat to be removed per minute will be so great as has been provided for. The gears of heavy electric trains work under much higher stress both in the metal and between the teeth in contact—very much higher, as these stresses are accentuated by errors of alignment shown by rounding of the teeth through wear—and with practically no lubrication. Yet they run for long distances. In the reduction-gear these unfavorable conditions are reversed—there is good lubrication and very uniform contact. If the gear were transmitting 6,000 horsepower—the very highest power hoped for—this frictional loss would be under 60 horsepower. As at least one-half will go to the large

gear, where it will readily be dissipated from the large surface, there is left well under 30 horsepower to remove from the pinion.

At 1,500 revolutions per minute of pinion and 453 pounds per inch of tooth contact, the gear will transmit 6,000 horsepower. The pitch-line speed would then be 5,500 feet per minute, and the mean speed of sliding about one-tenth this, or 550 feet per minute. There is on record a case of a rigid-angled worm-gear run successfully at 15,000 feet per minute with a contact pressure of 350 pounds per inch. The average speed of sliding will here be greater than the pitch-line speed by over 41 per cent, or, say, 21,000 feet per minute.

Before the present tests are completed, it will be impossible to predict the limit of safe load for the new turbine, but "Engineering" ventures these deductions:

At 1,000 revolutions per minute of pinion, and 283 pounds per inch of tooth contact—that is, as shown above, only 28 per cent of the intensity of pressure used with steel gears of $1\frac{1}{4}$ inch pitch at ordinary pitch-line speeds—the gears of $1\frac{1}{4}$ inch pitch at ordinary pitch-line speeds—the gear would transmit 2,500 horsepower. The merchant ship Aberdeen, by the engines of which Dr. Alexander C. Kirk introduced triple-expansion, was about of this power. Her main engines, without shafting, propeller, stern-tube, spare gear and fittings, weighed 221 tons. If we deduct from this the condensers, pipes, sea-valves, air-pumps, circulating pumps, donkey pumps, floors and gratings, etc., the weight left for the main engines proper will be about 150 to 160 tons—say, 150 tons. Hence the following comparison may be made:

	Tons.
Westinghouse marine turbine of 300 brake horsepower, 1,000 revolutions per minute, weighs	27
Reduction gear	25
Total	52
Aberdeen's engines replaced	150
Saving	98

That is, 65 per cent of the weight saved. If this design will transmit 2,500 horsepower, it is claimed that similar gears could be applied with great saving of weight and space to all steamships up to 18 knots, which comprise over 95 per cent of all the ships afloat. Increasing, by the law of comparison for similar machines, the dimensions and power of the present design, from 6,000 horsepower, a size is obtained suitable for the Mauretania with three large screws of the same total power as the present four-screw ship. Here again the weight of the turbines, would, it is claimed, be halved, as also the engine room length. The boilers also, as in the Dreadnought,

would, it is considered, be materially reduced.

Turbines for U. S. S. Wyoming.

According to advices from Washington, the two new battleships, the Arkansas and the Wyoming, contracts for which were recently awarded to the Cramp Shipbuilding Company, of Philadelphia and the New York Shipbuilding Company, of Camden, will both be fitted with turbine machinery of the Parsons type. The Cramp Shipbuilding Company was advised by the Navy Department several weeks ago that the Parsons turbine would be installed in the battleships built at their yard.

OBITUARY.

WILLIAM PARKER.

William Parker, principal assistant engineer of the Boston & Albany Railroad, died at the Homeopathic hospital, Boston, September 30, from typhoid fever. Mr. Parker was 48 years of age, and had been in the service of the Boston & Albany Railroad since 1885. He was a member of the American Society of Civil Engineers and the Boston Society of Civil Engineers. His last work of importance was the construction of the new docks, grain elevator and other buildings at the East Boston terminal of the Boston & Albany Railroad.

LEWIS C. GROVER.

Lewis C. Grover, formerly president of the Colt Patent Firearms Manufacturing Company, died September 30, at Hartford, Conn., aged 60 years. He was considered one of the country's leading experts in gun making. Since January he had been chairman of the board of directors of the Colt Patent Firearms Manufacturing Company, of Hartford, and the Colt Arms Company, of New York.

HERBERT H. CULP.

Herbert H. Culp, 39 years old, one of the founders of the town of Vandergrift, Pa., and its first business man, died October 6, at the West Haven, Pa., sanitarium after a long illness. When Vandergrift was founded, about 15 years ago, Mr. Culp was a director of the Vandergrift Savings & Trust Company and the Vandergrift Realty Company.

The Mexican "Herald" announces the completion of plans by the Pearson interests for a new steel plant in Mexico City, the initial cost of which is to be \$500,000 gold. High-grade steel for drills and tools, light rails, etc., will be made. A \$250,000 chemical factory for making calcium chloride, caustic soda, etc., is also to be built at once near the steel plant.

"Hydro" Recording Velocity Gauges: Their Use in Boiler Plants

By F. Hymans, M. E.*

BROADLY speaking, the prime moving factors in all fields of industry are inventive genius and the application of scientific research. What the former has done in the way of labor saving devices especially in America, is of world-wide renown, the application of both has resulted in the invention and perfection of the steam engine, electric generator, gas engine, etc., and the chemical industry bristles with fine examples of the application of the latter.

Now that we have come to fully realize that the great natural resources of this country are exhaustible, we remember that science since long ago pointed a warning finger to the enormous waste that is going on, especially in those industries and processes which depend for their power or chemical action on the heat derived from the combustion of fuel. The active medium in the combustion of fuel is the oxygen, of which the air contains only 24 per cent. The perfect combustion of one pound of pure carbon requires $2\frac{2}{3}$ pounds of oxygen, developing 14,500 B. t. u. Since $2\frac{2}{3}$ pounds of oxygen are contained in about 12 pounds of air, the perfect combustion of one pound of pure carbon requires 12 pounds of air. The 14,500 B. t. u. developed at the combustion serve to heat the combustion gases. With the theoretical minimum amount of 12 pounds of air to one pound of pure carbon we obtain 13 pounds of combustion gases at an elevation of temperature of 4,580 degrees, Fahrenheit. However, our present-day furnaces require from 1.3 to two times the theoretical minimum of air for the combustion of the fuel resulting in a considerable lower temperature of the combustion gases. It is impossible to bring every particle of oxygen in contact with the particles of coal; in fact, the 79 per cent of inactive material of the air defeat the intimate mixing of

gineer, and is only given here to emphasize the fact that the best results in any furnace, whether for boilers, metallurgical process or heating purposes, cannot be obtained unless the smallest amount of air that will suffice for the complete combustion of the fuel is introduced in the combustion chamber. The operation of furnaces usually is entrusted to unskilled labor, men without knowledge of the process of combustion, who through long service have obtained a certain experience in the handling of the furnace. In boiler plants the fireman is supposed to hold the steam pressure, with regenerative furnaces used in metallurgical processes or glass industry he is to maintain a certain temperature, but no means heretofore existed for the owner to exercise control over what the fireman is doing or to prescribe the manner in which he has to proceed. The result of this is waste and loss. The boiler plant may be equipped with a recording steam pressure gauge and the chart may show a nearly constant steam pressure; still this steam pressure may have been held with an excess of coal and air, both of which go hand in hand.

The intent of this article is to introduce a new recording instrument now being placed on the market by the "Hydro" Manufacturing Company, 720 Lewis Block, Pittsburgh, Pa., which renders a chart that is a measure for the velocity of the combustion gases, for their volume, which clearly indicates every move of the fireman or of the automatic stoker, and will serve as a guide to the fireman in which manner to obtain the best results.

With particular reference to boiler plants the draft gauge heretofore in use is in fact nothing but a pressure gauge measuring the vacuum at a point close to the damper and shortly before the combustion gases pass into stack. A few

Under certain weather conditions f. i. the wind may exercise a suction and the draft gauge would indicate a vacuum even though the damper is entirely closed. The varying thickness of the bed of fuel, the varying constitution of the fuel, the formation of clinkers offer a varying resistance to the passage of air through the grate, and though the draft gauge may indicate one and the same vacuum the amount of gas that passes through the flues may be wholly different.

The "Hydro" recording velocity gauge utilizes the simple expedient of measuring the difference of the pressure of the combustion gas at a point above the grate surface and at a point close to the damper. This differential pressure is the pressure that forces the gases of combustion through the flues; it is solely dependent upon the velocity of the gases and it is therefore at once a measure for—

1—The velocity of the combustion gases.

2—The amount of the combustion gases.

And since the latter stands in intimate relation to the amount of fuel and air, the indications of the instrument are further a measure for—

3—The amount of fuel burned on the grate.

4—The amount of air used in the process of combustion.

This illustrates at once the fuel saving possibilities of the instrument and still more so when it is remembered that the velocity of the combustion gases is a direct measure for the time required to pass through the flues, i. e., for the time the gases have been in contact with the heating surface. Therefore excessive differential pressures are indicative of high stack temperatures and of loss.

In how far the instrument may be used as a check on the fireman, diagram Figure 1—

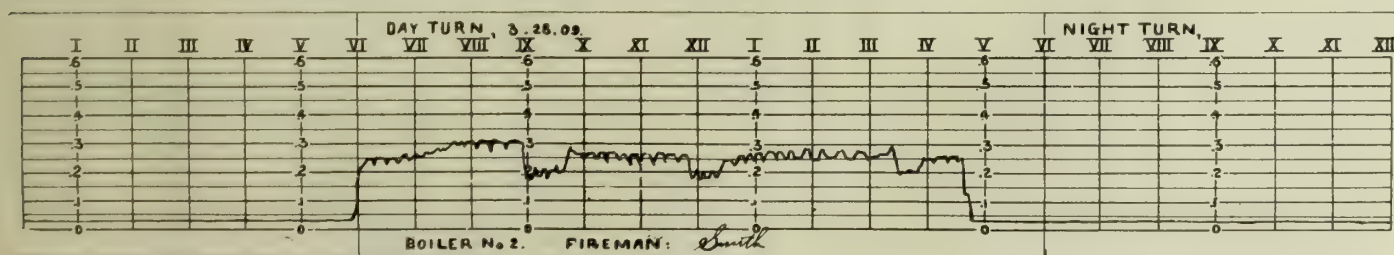


Figure 1.

coal and oxygen.

The above is well known to every en-

careful considerations will show that this draft gauge is no reliable measure for the amount of air introduced in the combustion chamber.

clearly shows. Working hours at the factory where the diagram is taken are from 6:30 a. m., to 5 p. m.. The chart shows that the fireman began getting up

*Copyright, 1909, by F. Hymans, M. E.

steam half an hour earlier, at 6 a. m., the damper being closed during the night and the differential pressure being 0.025". At 6 p. m. he opened the damper, the differential pressure increasing at once. After that the differential pressure gradually increased and the chart shows in nearly regular intervals downward pointed curves. Such a point occurs when the fire door is opened, i. e., when fresh fuel is added to the grate. The curve would point upward if the damper is not closed simultaneously with the opening of the fire door, as the opening of the fire door permits the air to enter direct, eliminating the resistance of the grate against the passage of the air, and thereby permitting a greater amount of air to enter the flues. This the instrument indicates by an increase of the differential pressure and the curve points upward. On the chart Figure 1, the curves properly point downward, showing that the fireman decreased the amount of air entering the furnace by partly closing his damper. The pointed curves are therefore, a fine check on the regularity of the combustion process. Between 9 and 10 a. m., the differential pressure drops for a long time, indicating the cleaning of the fire from clinkers with a simultaneous greatly closed damper. Thereafter the combustion process continues regularly as indicated by the downward pointed curves and at about 12 p. m., the drop of the differential pressure indicates a second deposit of clinkers.

Between 1:30 and 3 p. m. the points of the curves are less sharp, indicating that the fire door remained open longer than previously. This was made necessary as the fireman at that time had to use wood and waste of the factory for fuel. Between 3 and 4 p. m., the chart indicates another deposit of clinkers. At 4:30, half an hour before close of business, the differential pressure drops again to 0.025 indicating that the fireman has banked his fire for the night.

While the foregoing is an excellent example of the check the instrument permits on the work of the fireman, it is equally useful for mechanical stokers for the simple reason that whatever the type or make of the furnace, the speed and amount of the combustion gases should be a minimum for the best results. With this point in view a still more important use can be made of the instrument which of necessity must result in prevention of waste. A few observations will in any boiler plant determine the minimum differential pressure that is required to maintain the steam pressure under the varying loads. These once being determined the fireman or mechanical stoker should be made to regulate the combustion process in accordance. The result will be the

maintenance of the most economical velocity, resulting in the most economical consumption of fuel.

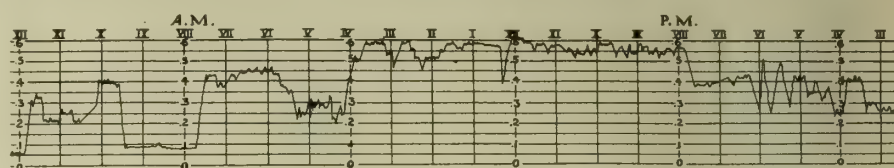


Figure 2.

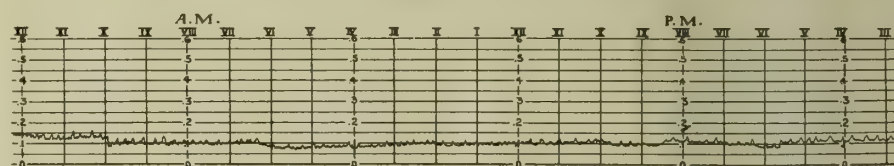


Figure 3.

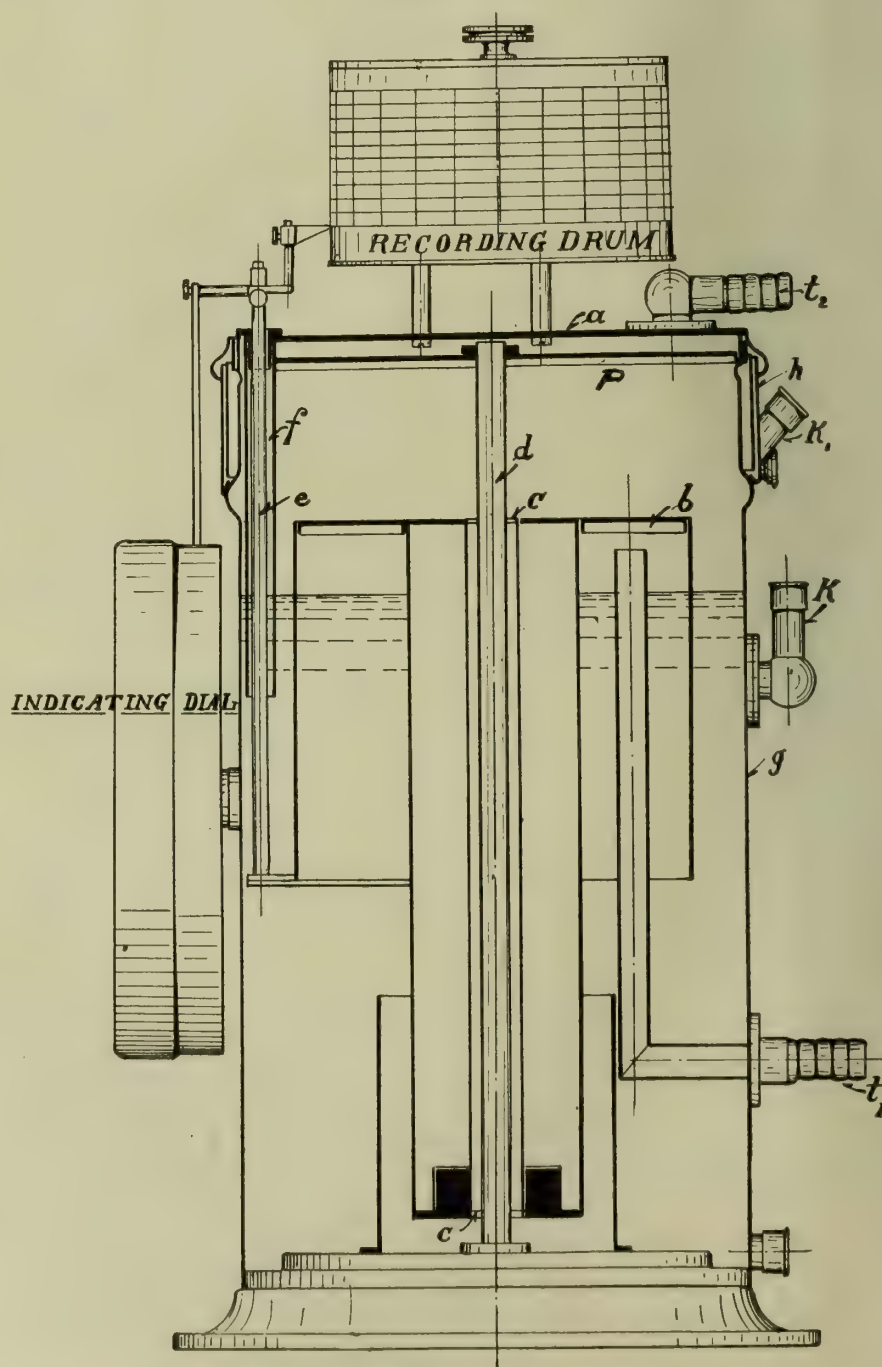


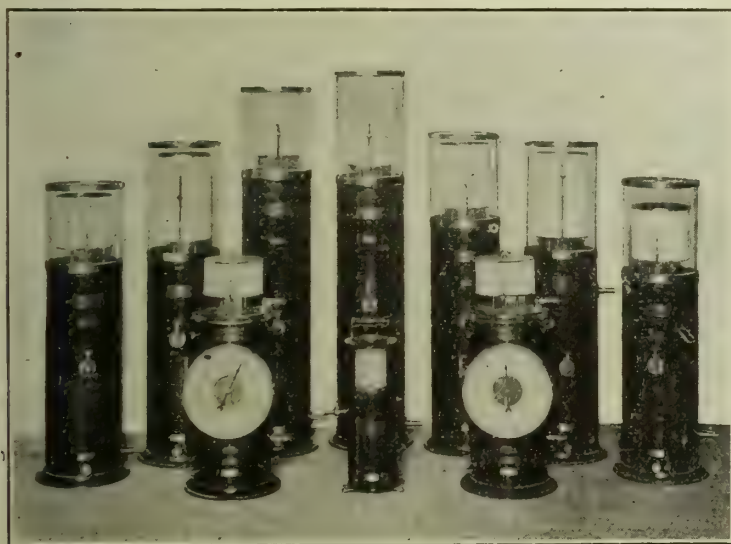
Figure 4.

The two diagrams, Figures 2 and 3, furnish an excellent proof for the aforesaid. Figure 2 obtained without knowledge of the fireman, shows great irregularity, waste of fuel, large excess of air, high stack temperature and uneconomical service; Figure 3, fireman working under guidance of velocity gauge, shows great regularity, low differential pressure, good combustion, economical service and the value of the apparatus.

Figure 4 shows the construction of the apparatus, which is ingenious in its simplicity. It consists of a cylindrical vessel "g," a cover "a," which dips with its outer rim into a liquid contained within the annular space between vessel "g" and

of bell and float stand in a definite relation to the indications of the instrument. The standard construction is such that a differential pressure of one inch water represents a movement of four-inch of the bell, and this being obtained without the use of magnifying levers justifies the claim of extreme sensitiveness and accuracy of indications for the instrument. In order to make the indications plainly visible to the fireman the rod "e" is further connected to a dial indicator magnifying the actual differential pressure 40 times. Workmanship of the instrument is in line with its other high class features; in fact, the scientific principle of its operation, its

No. 2. No. 3. No. 4. No. 2. No. 4. No. 3. No. 2.



No. 1

No. 1.

Figure 5.

cylinder "h." This liquid acts as a seal for the gas within vessel "g." The working parts of the instrument consist of the bell "b" to which is attached a

construction and its usefulness merit a wide recognition for the instrument.

The gauge above referred to is shown in Figure 5 as "No. 1."—the others be-



Figure 6.

float "c" guided upon a rod "d" and submerged in the operating fluid. Gas pressure is introduced under the bell through nozzle "t1" and above same through nozzle "t2," the difference, causing the movements of the bell which are carried outwardly to the recording drum containing the clock work of the instrument by means of rod "e" working through a tube "f" attached to the cover "a."

The beauty of this arrangement is evident through the fact that the areas

ing gauges adopted for other purposes, such as—

No. 2—Recording pressure gauge for gas works, chemical industries, etc.

No. 3—Recording draft gauge for mine ventilation, exhaust fans, etc.

No. 4—Recording pressure and draft gauge for by-product coke ovens, open hearth furnace, soaking pits, glass ovens, etc. A diagram of this last named instrument is represented by Figure 6, from which it is evident that it not only records the draft and pressure, but that reversals are plainly discernable, thereby giving a fine check on the regularity of the operation.

MANUFACTURING.

Milwaukee—Plans have been prepared by Architect O. C. Uehling, 120 Wisconsin street, for a \$5,000 shop, to be erected for the Wisconsin Foundry Company.

Queenstown, Ala.—Hays Rapid Tunneling & Mining Machine Company, 621 Brown-Marx building, Birmingham, Ala., recently incorporated with a capital stock of \$1,000,000 by E. W. Hays, president; A. C. Bruce, vice president, and H. E. Shelton, secretary, will erect a machine shop, 60x100 feet, and later a foundry. Cost of buildings, \$10,000.

Rockford, Ill.—The Ingersoll Milling Machine Company will erect a one-story concrete addition, 50x100 feet, to its plant.

Milwaukee—The Milwaukee Dry Dock Company will erect a \$25,000 machine shop at the foot of Mineral street.

Lima, O.—The Variety Iron Works, Cleveland, received the contract for constructing a two-story foundry addition, for the Ohio Steel Castings Company. Cost \$35,000.

Owosso, Mich.—The Corrugated Steel Culvert Company, which was recently incorporated with a capital stock of \$20,000, will erect a plant here. C. Holden, of Yale, Mich., is general manager of the plant.

Hartford, Conn.—The Hartford Machine Screw Company has had plans drawn for an addition to its plant on Capitol avenue. The present main factory, 32x210 feet, will be carried up two additional stories.

Oakley, O.—Architects Rapp, Zettel & Rapp, of Cincinnati, are taking separate bids on constructing a brick and steel machine shop on the Oakley Colony Grounds, Columbia Road, for the Cincinnati Milling Machine Company. Cost \$100,000.

Carnegie, Pa.—The brick work is up to the second story on a three-story brick and stone fireproof packing house, being constructed on Walnut street, for the Abbott Packing Company, by Contractor D. T. Riffle, of Pittsburgh. Cost \$50,000.

Cleveland, O.—The Van Dorn Iron Works Company, 2685 East Seventy-ninth street, will start work at once on erecting a one-story brick and steel factory addition, on Carnegie avenue, for Warner & Swasey, 5809 Carnegie avenue. Cost \$30,000.

Contractor H. G. Slatmyer, 203 Lakeside avenue, Northeast, will start work at once on constructing a two-story brick and steel factory addition, for the Cleveland Steel Company, to cost \$20,000.

Delphos, O.—Foundations are in for a \$25,000 brick and reinforced concrete cigar factory, to be constructed for the Diesel-Wemmer Company, by Contractor Carl F. Steinle, of Fremont.

Toledo, O.—The H. J. Spieker Company, 409 Michigan street, received the contract for constructing a three-story brick and reinforced concrete factory addition on Champlain and Chestnut streets, for the General Electric Company. Cost \$250,000.

The H. J. Spieker Company, have started excavations for a three-story brick factory addition, to be erected on West Central avenue, for the Toledo Motor Company.

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THE RECOVERY IN IRON AND STEEL PRICES.

PRICES of iron and steel have been recovering so rapidly that a tabular statement of present and past prices should be of interest, and we have accordingly compiled a table, showing prices at pivotal points in the past few years. A brief account follows of how the selection of times was made.

Since the 1893-8 depression there have been three great high points. First, there was the boom of 1899, when prices tended sharply to advance because the trade had lost all sense of fitness in the delirium of a sudden change from a long period of insufficient demand to a period of demand in excess of capacity. There was no restraint upon the advance; each producer endeavored to obtain the very highest price possible, and as most producers had sold much of their product far ahead at low prices, the high prices obtained at the height of the boom merely served to raise their averages, in some cases only slightly. The high points reached in the boom of 1899 were therefore unimportant from a historical standpoint, except in the lesson they taught that such prices could not be maintained; that they promptly choked off demand. That lesson was so thoroughly learned that there is no use talking about it at this time.

The second high point was in 1902 when under a resumption of good demand prices advanced again, not to such heights as in 1899, but still to a pretty high level. The third high point was in 1905-6-7, a period of heavy and sustained

demand. Prices were not uniform during that period; there was a gradual advance in the general level of finished steel products, through slight advances here and there, and a heavy advance in pig iron and a very material advance in crude steel. The chief difference in the price alignment in 1902 and 1905-6-7 was, that while in 1902 there was a large production of plates, shapes, bars, rails, etc., outside the United States Steel Corporation, there was relatively little outside production of wire, pipe, sheets and tin plates. By 1905-6-7, however, considerable independent competition has arisen in these lines. The result was that on certain products the high points of 1905-6-7 were higher than in 1902, while on other products prices were not as high as in 1902.

The low points selected are naturally intermediate of the high points, there being one in 1904 and another in the spring of this year. In order to cover the fact that the decline from the 1907 high point was by stages, there being small and orderly reduction in finished steel products in January and June, 1908, and a big drop in the first half of this year, after the declaration of an open market, two points are taken, the one July 1, 1908, and the other the low points in the second quarter of this year. It may be noted that in 1904 and in the second quarter of this year the low points in different products were not contemporaneous; for instance, last spring plates, bars and shapes found a low point and started to advance before the reduction in wire products was made at all. The low prices given in the table, therefore, were not made all at the same time. The price of pipe is computed in cents per pound from the extreme discount on sizes 3/4 to 6-inch, on the basis that the list price averages 10 cents per pound. Pig iron is f. o. b. valley furnace; other prices are at Pittsburgh. In the case of finished steel products regular prices only are taken, not premium prices for small lots for early delivery.

	High 1902	Low 1904	High 1907	July 1, 1908	Low 1909	Oct. 8, 1909
Bessemer pig iron.....	\$22.00	\$11.50	\$23.50	\$16.00	\$14.50	\$18.50
Basic pig iron.....	21.00	11.50	23.00	15.00	13.90	17.00
Foundry pig iron.....	23.00	11.50	24.00	14.60	14.25	17.00
Bessemer billets.....	32.50	19.50	30.50	25.00	22.00	25.00
Rails	28.00	28.00	28.00	28.00	28.00	28.00
Shapes	1.60	1.40	1.70	1.60	1.10	1.50
Plates	1.60	1.40	1.70	1.60	1.10	1.50
Bars	1.60	1.30	1.60	1.40	1.05	1.40
Pipe	2.95	1.80	2.47	2.28	1.80	1.90
Wire nails.....	2.05	1.60	2.05	1.95	1.60	1.80
Tin plate	4.00	3.25	3.85	3.65	3.40	3.50
Sheets	3.00	2.10	2.55	2.45	2.10	2.30

The high points in 1907 were in some cases higher than the high points in 1902, and in other cases lower, the general average showing about the same level in each period.

The low points of 1904 and 1909, on

the other hand, show striking dissimilarities, pig iron dropping to the lower level in the earlier period, while nearly all finished steel products dropped to the lower level in the later period. The low points on pig iron in 1904 were about \$3 lower than the low points reached in 1909, while billets were \$2.50 lower. Coming to finished steel products we find that only one product was lower in 1904 than in 1909, that being tin plate, the exception being due to the close control exercised by prices of sheet bars and pig tin. Pipe, nails and sheets showed identical low points in 1904 and 1909, and rails may be mentioned in this connection also, as they did not fluctuate at all in the total period covered by the table.

The 1909 low point on bars was \$5 a ton below the low point in 1904, while the low points on plates and shapes were \$6 lower. The sharpest contrast therefore is between pig iron and bars, shapes and plates. Comparing low points in 1904 and 1909, pig iron was lower in 1904 by \$3 a ton, while plates, shapes and bars were \$5 to \$6 a ton lower in 1909. There was a change in the spread between pig iron and bars, plates and shapes of \$8 to \$9 a ton.

Now as to the recovery it is easily observed that most finished steel products have recovered most of their lost ground by this time. All products are decidedly short of having reached the high point of 1907, but they have, as a rule, come within striking distance of the prices of July, 1908, and these prices were, as to all the finished steel products listed in this table, the "official" prices when the price maintenance policy was dropped on February 18, last.

Pig iron remains quite short of having reached the high point of 1907, but that is only natural. While during 1905-6-7 prices of finished steel products advanced but slightly, pig iron advanced a great deal. For instance, the official average price of Bessemer pig iron in 1905 was \$15.48, valley, but the average in 1907 was \$21.76, and the high point

in the year was \$23.50, so that Bessemer iron advanced more than \$8 a ton, during 1905-6-7, while finished steel products advanced perhaps an average of \$2 a ton.

This feature brings out a fact that is

worth noting, as it may throw light on the course of the market in 1910. While finished steel products at present are a trifle below the average level with which the year 1905 opened, pig iron is already decidedly higher. The course of finished steel through 1905-6-7 was a gradual, but very moderate advance; the course of pig iron was a decline during the first half of 1905, followed by continued rises. The market did not advance steadily after the middle of 1905, but it made practically no recessions. Its most rapid advance was from August to December, 1906. History has shown that pig iron was advanced too rapidly, in the closing months of 1904, while steel products were not. At the present time pig iron has been advanced more rapidly than at the earlier time, while finished steel products are, if anything, a trifle lower than on January 1, 1905. If pig iron declined in the first half of 1905, but is higher now than at the beginning of 1905, there is some reason to infer that it will repeat its performance of 1905. We do infer that, and predict that it will decline during the first half of 1910.

THE BUSINESS SITUATION.

WHATEVER may be said about the iron and steel trade following too rapid a pace in its recovery, it is well settled that general business is improving and that, given a little time, the improvement in general business will easily be sufficient to take care of the iron and steel industry. It has been the universal experience that when the iron and steel industry revives after a lull, it does not begin where it left off, in point of tonnage, but soon sets a new rate, substantially the rate it would have reached had the improvement been continuous instead of being interrupted by a lull. Thus from 1898 to 1902, pig iron production increased by 6,000,000 tons, or at the rate of 1,500,000 tons a year. Only a slight gain was shown in 1903, because a depression started late in that year, and in 1904 the depression continued, with the result that while 17,821,307 tons of pig iron were produced in 1902, only 16,497,033 tons were produced in 1904. In 1905 the industry became prosperous again. Supposing the rate of increase from 1902 to 1904 had continued steadily, we should have had, from 1902 to 1905, three years at 1,500,000 tons a year, 4,500,000 tons, added to 17,821,307 tons, which would be 22,321,307 tons. As a matter of fact 1905 produced nearly 700,000 tons more than this, or 22,992,380 tons, although that was a gain of over 6,000,000 tons from the preceding year and nearly 5,000,000 tons from the best previous year. The industry had become larger. The gain from 1905 to 1906 was over 2,000,-

000 tons, but assuming a 1,500,000-ton gain yearly after 1905 would make 7,500,000 tons increase by 1910, or 30,500,000 tons, which is just about what leading authorities in the industry are predicting.

In the general improvement in business the United States appears to be leading, which is only natural. This country has only about 5½ per cent of the world's population, and occupies only some 6 per cent of the world's habitable area, but it produces nearly a quarter of the world's gold, more than a third of its silver, nearly 45 per cent of its pig iron, more than half of its copper, almost 40 per cent of its coal, a fifth of its wheat, and more than three-quarters of its cotton, while it has 40 per cent of the world's railroad mileage. With such progress made in the past it is only natural that the United States should lead in reviving business.

OUR RETROSPECT.

SEVERAL rather interesting things appear in our issue of October 11, 1889, an even 20 years ago; in fact the issue is more interesting to us in these days than most of the back numbers we have referred to in making our 20-year retrospect.

It is noted that "Charles M. Schwab, chief assistant to the late Captain W. R. Jones, as superintendent of the Homestead works, has been promoted to the general superintendency of the Edgar Thompson Steel Works. John Potter, assistant superintendent at Homestead, has been made superintendent of Homestead works." These are all familiar names. On December 15, 1908, Mr. Schwab was questioned by the Ways and Means Committee at Washington in regard to the famous \$12 a ton rail letter he wrote Mr. Frick under date of May 15, 1899. In explanation, Mr. Schwab said: "First of all, I want to say that that letter was written as an enthusiastic and optimistic young man seeking preferment in a great company." Messrs. Payne and Cockran then urged him to tell his age, but he was too modest. It is interesting to observe that about 10 years before writing the letter Mr. Schwab had already received a good deal of "preferment."

There is an article on "A great southern project," which tells the story of English capitalists being in course of spending \$10,000,000 at Middlesborough, Ky. They were moved to start by sending out an expert, and "his report was so favorable that they could scarcely believe it, and others were sent, and they more than confirmed what the first had said." "They have already spent \$4,000,000 in their work at Cumberland Gap, or rather at Middlesborough, which

is the name of the new town, but that is only the beginning. They have made contracts for not less than four furnaces, rolling mills and steel works, to cost \$3,000,000," etc., "or an aggregate of over \$11,000,000 in cash." Two blast furnaces really were completed and blown in, early in 1893. The furnaces are now the property of the Virginia Iron, Coal & Coke Company. The seven open-hearth furnaces, five of them completed, have been abandoned altogether. The incident is instructive, since it does not stand alone. English capital has not generally been successful in iron and steel ventures in the United States. In a recent retrospect we referred to the failure of a deal by which a British syndicate was to buy the Carnegie works. The failure was lucky for those who did not sell, and probably also for those who did not buy.

We find an industrial item about which we wish there were more details: "The steel railroad tie machine, recently put up at the Homestead mill of Carnegie, Phipps & Company, was tested on Monday and proved a success. It has a capacity of eighty ties an hour. The first run of ties will be laid on the Chicago terminal, of the Chicago & Western Indiana Railroad."

There is a long editorial on the car famine, and from reading it one would conclude that outside of the troubles in the winter of 1902-3, there has been nothing so serious since. It is said that "every August this famine sets in, to continue through the autumn and into the early winter." Nowadays car famines are more likely to occur in the winter, the weather impeding the movement. At that time the proportion of cars engaged in the grain trade was larger than now, as the movement of minerals and manufactures has increased more than the movement of grain. We are told that the coke operators "have used up all available space at their ovens for storing their coke at one end of the line, while, at the other, furnaces are being banked for want of fuel."

The Bessemer pig iron market had shown such a movement as to call for editorial comment. It is stated that 15,000 tons had just sold at \$20, valley furnace, or \$20.80, delivered Pittsburgh, fairly establishing the market, and showing an advance of \$2 a ton in a week, \$3 in a fortnight, and \$5.25 from the low point of the year, made in June. It is pointed out that the cause of the advance is the much heavier operations of steel work, chiefly on rails.

It is interesting to note that the freight on pig iron from the valleys to Pittsburgh 20 years ago was 80 cents. The present rate is 90 cents. There is one case, at any rate, in which freight rates have not gone down.

Market Conditions, Prices in Producing and Buying Centers

Bessemer Iron at \$18.50;
Cambria Absorbs Available Supply.

PITTSBURGH — The Cambria Steel Company on last Thursday surprised Pittsburgh pig iron brokers with a purchase of 41,000 tons of Bessemer, for delivery during last quarter of 1909 and first quarter of 1910, which practically cleaned out the Pittsburgh market of all available iron for prompt delivery, and forced the minimum quotation on prompt Bessemer up to \$18.50.

Of this purchase, the Cambria secured 18,000 tons on the basis of about \$18, Valleys, and a shade higher, for fourth quarter delivery; and 23,000 tons more for first quarter of 1910 at \$18.50 Valleys, or \$19.40, delivered Pittsburgh—the price at which Bessemer for 1910 delivery had been quoted all week. It is considered highly probable that no more Bessemer iron will be sold for next year under \$19, Valleys; and several furnace interests, at the close of the week, flatly demanded \$20 for next year's tonnage.

The present situation carries with it the threat of "squeeze prices" before the close of the year. The greater part of the Cambria's purchase was made through the Bessemer Pig Iron Association, though some of it was taken through W. P. Snyder & Company, and other sources. In fact, small lots were taken up wherever they could be found, the original inquiry being for 50,000 tons. The result is said to be that the Bessemer Association is now virtually sold up to April 1, 1910. For this year's delivery, it will be extremely difficult to find any more Valley Bessemer at any price. There are indications still that some of the large steel interests will find their own pig iron capacity falling short of the demand of their mills before January 1, and if this situation arises, fancy premiums may be extorted, if furnacemen so desire. There is said to be a reasonable prospect that the Steel Corporation will find it necessary, in the light of the present pressure on its steel mills, to buy some outside iron before the close of the year, though there has been no intimation as yet of a revival of the Corporation's inquiry for 50,000 tons, first noised about the trade early in September.

Before the closing of the Cambria's purchase last week, there were some sales of Bessemer at \$18.50 for this year's shipment, though in most instances this was on contracts extending into 1910, several lots being closed at that price for deliveries extending from November to April. The Sharpsville Furnace

Company early in the week closed for the delivery of 1,000 tons monthly, October to June, inclusive, at \$18.50, Valleys. The buyer is said to have been the Youngstown Sheet & Tube Company. The Otis Steel Company, of Cleveland also bought of Valley interests 2,100 tons, for delivery from October 1 through January, at the \$18.50 prices. Notwithstanding these sales at the new high figures, however, some stocks on hand still were found to be available at the \$18 price when the Cambria came into the market. The Cambria has taken practically no outside Bessemer since 1907. In that year it had a regular contract for about 10,000 tons, but after blowing in its No. 8 furnace, in August, 1907, its own pig iron capacity was found sufficient for its needs until the present rush.

Aside from the purchase by the Cambria Steel, something over 16,000 tons of Bessemer changed hands during the first nine days of October at the \$18.50 price, for this year and next year's delivery. Total transactions in Bessemer in the Pittsburgh market since September 1 have exceeded 273,000 tons, including the Cambria purchase and the conversion deal in September by the Lackawanna Steel Company for 25,000 tons. The sales for September reached an aggregate of 216,600 tons, which is probably a record for Bessemer pig sales for Pittsburgh district in one month. The average prices of Bessemer during September, based on actual sales at flat figures, was \$17.434, Valleys, which is \$18.334 Pittsburgh. This should be compared with \$14.58 for May, which was the low month of this year, to appreciate the rapidity of the rise. The sales figuring in this average, however, only totalled 152,600 tons, transactions of 1,000 tons or over at flat figures alone being considered.

The Bessemer and basic averages, at Valley basis, since the opening of 1908, are as follows:

	Bessemer		Basic	
	1908	1909	1908	1909
January ...	\$18.10	\$16.44	\$17.10	\$15.50
February ...	17.00	15.88	17.00	15.19
March	16.96	15.44	16.00	14.94
April	16.50	14.90	16.00	14.15
May	16.03	14.58	14.83	14.12
June	16.00	15.23	15.25	14.94
July	15.83	15.47	14.49	15.00
August	15.21	16.23	14.62	15.27
Sept.	15.00	17.43	14.27	15.90
October ...	14.58		14.25	
November .	15.84		14.93	
December .	16.50		15.50	
Average .	\$16.14		\$15.35	

Basic and foundry grades of iron also reached their proper positions, in rela-

tion to Bessemer, during the week. Basic sold at \$17, Valleys, for prompt delivery, while a considerable tonnage was disposed of for 1910 at \$17.50. No. 2 foundry iron sold up to \$17.25 for prompt, and \$17.75 for next year. The basic prices quoted above, however, were considerably shaded earlier in the week, some 10,000 tons of basic changing hands on a deal calling for shipment beginning in November and running through first half, some of it as low as \$17.60, delivered, which would be \$16.70 Valleys, and the remainder at about \$17 Valleys. Most of this business was taken by furnaces outside the Valleys, however. The \$17.50 price for next year's basic iron was established on a sale of about 10,000 tons, for first half, at that figure, the buyer paying the new price after taking some scattering tonnage at a shade less. In foundry iron one sale of 2,000 tons was made, shipment extending from November through August of next year, at \$17.75. Speculators took up about 5,000 tons for this year at the \$17 price. There seems to be little question but \$17.25 will be the minimum on the opening of the market this week, for No. 2 foundry.

The coke market continues to be the critical point on which the whole iron situation turns, according to estimates of furnacemen, and hence the refusal of Connellsville operators toward the last of the week to quote even prompt furnace coke at less than \$2.90, provoked gloomy comment. There seems to be little doubt that the situation at Connellsville is one of the virtual famine. Contracts for next year's coke are still possible at \$2.90, though an increasing number of operators are holding out for the \$3 minimum price, and nobody is quoting any less on fourth quarter than on next year. A peculiar feature of the coke market is the fact that it is easier to make contracts extending even into the second half of 1910 on the \$2.90 basis than for first quarter—the feeling in the Connellsville region, though not one of apprehension lest the market overreach itself, at least justifying the precaution of getting as long-term contracts as possible.

Domestic producers of ferro-silicon also advanced prices during the week, having become comfortably sold up for the remainder of the year. Malleable iron was quoted as high as \$17.25 and \$17.50, and forge at \$16.50 and \$16.25.

Much interest was displayed during the week in the outcome of the rail situation, the order of the Pennsylvania for 200,300 tons of standard rails having been only partially apportioned. As

stated in these columns last week, however, the Carnegie mills will secure at least 85,000 tons of this order, which will be rolled at the Edgar Thomson at Braddock. The Illinois Steel Company's rail plants and the new mills at Gary are already filled until after the first of the year, the 500,000 tons on the books at Gary and Chicago having been increased last week by a 70,000-ton order from a Western road. The Pennsylvania, Bethlehem, Lackawanna and Cambria will divide the remainder of the P. R. R. order. Meantime, the New York Central's 250,000-ton order is yet to be placed, and as a large part of this will be for Bessemer rails, it is expected much of it will come to the Carnegie mills. The Norfolk & Western has added to its early rail allotment. The re-rolling rail mills at Newark, O., and Cumberland, Md., have been started, while the demand for other track equipment has increased to a marked degree.

The steel bar situation became much more tense during the week, and the iron bar manufacturers took care of a considerable overflow business. Mills were cautious about taking on tonnage for first quarter, though some are quoting the 1.50c for a limited tonnage.

The sheet and tin plate market was strong, justifying the advance of the week before. The American Sheet & Tin Plate Company is reported to be booking business up to July 1, but is asking premiums on the latter part of the delivery. Black sheets constitute the strongest item in the sheet list. The Youngstown Sheet & Tube and other independents announced new sheet cars conforming to the combine prices. The independent tin plate mills have at times been securing premiums for early delivery. Bessemer sheet bars reflected the advance slightly, though the sale was reported of 1,000 tons for fourth quarter at \$27.50, Pittsburgh, or \$28 delivered to a mill west of Pittsburgh.

Steel bars have sold at 1.50c for first quarter, and plates at 1.60c for the first quarter, prices \$2 a ton above the minimum of the market, done only on delivery at mills' convenience. A general firming up to this level is expected shortly, for all deliveries.

Certain wire products which are sold farther ahead than the jobbing wire products are being held at \$2 per ton advance over current prices which indicates market is getting ready for general wire advance by January 1, in harmony with the recent advance of $\frac{1}{8}$ cent a pound on telegraph wire. In railroad spikes, quotations show an advance of 10 to 20 cents for next year's delivery. The minimum for early delivery is 1.70 and 1.75c.

The steel car business revived during

the week, new orders including 900 cars awarded by the Lehigh Valley to the Standard Steel Car, and 250 more to the Cambria Steel; 100 gondolas for the Westmoreland Coal Company, to the Cambria Steel; and 100 gondolas for the Gilmore & Pittsburgh Railroad to the Pressed Steel Car. The Great Northern is figuring on 1,000 steel ore cars. The shortage in plates has been intensified by the increased activity at the car plants, and plates have sold into next year on specific contracts at 1.50c and higher, some quotations ranging around 1.60c.

Following the announcement by the National Tube Company of the advance of \$2 a ton in the price of boiler tubes, independent manufacturers who make charcoal iron tubes raised their quotations \$4 a ton. Independent merchant pipe manufacturers also advanced prices from \$2 to \$4 a ton.

The week proved the most productive of good contracts with local fabricating companies in some time. The McClintic-Marshall Construction Company landed the 7,000-ton order for the Detroit terminal to be built by the Michigan Central, which will probably be used ultimately by all roads entering Detroit, in which event a considerable increase in the tonnage will be involved. The McClintic-Marshall interest also secured the contract for the new buildings at the projected steel mills of the Southern Iron & Steel Company, at Alabama City, about 15,000 tons. The American Bridge Company booked the 1,500-ton order for the new buildings for the open-hearth addition to the Carnegie mills at Homestead, and 1,000 tons for an office building at Fairmont, W. Va.

The scrap market was bullish during the week. Railroads are holding back some material, and the general impression seems to be that heavy melting steel is going to command \$19 to \$20 before the close of the year. Heavy melting scrap brought \$17.75 during the week. In rare cases consumers paid \$18. Re-rolling rails have sold at \$18.50 and \$18.75, and railroad malleable at \$17 to \$17.50.

Rise in Price of Eastern Iron Is Reported Checked.

NEW YORK — The steady rise in pig iron extending over more than 60 days, apparently has been checked, unless the Eastern market once more responds to the bullish tendencies displayed in Pittsburgh district. An unexpected tonnage of Eastern basic appeared in the market during last week, and some 20,000 tons of it was taken up for immediate delivery at prices around \$18. Middlesbrough No. 3 has been freely offered at \$17.35 to \$17.55, ex ship Philadelphia, duty paid, which of-

fers have further assisted in steadying domestic prices. One cargo of this foreign iron has gone to an Eastern founder.

The last of the \$14.50 Alabama iron has just been cleared out, and prices are firm at the \$15 level for this year and the first quarter of 1910. Virginia producers have advanced to a \$16.50 basis for first half, but one interest is still offering iron at \$16 for last quarter. Some Swedish iron is reported to have been sold to New England consumers, and another New England buyer is credited with having taken a small cargo of Middlesbrough pig.

There is some export rail inquiry, in addition to the activity of the Eastern railroads. The New York Central's letting of 250,000 tons is expected to come out during the next week. The Norfolk & Western has closed for 32,000 tons of standard rails, which are distributed among the Carnegie, Cambria, Bethlehem and Pennsylvania Steel. In structural materials, brisk bidding still characterizes the market, though it is now evident that there will be no midwinter lull for the fabricating companies. Bookings by the American Bridge Company for September totalled 56,000 tons, of which 28,000 were for the Westchester railroad extensions. Bookings of the independent companies are estimated at 60,000 tons. The American Bridge Company took the 2,000 tons for the new Arbuckle coffee warehouse, and the Bethlehem Steel the 1,000 tons for a new brewery here. Two excellent export orders were landed by Carnegie Steel, one for the new bridge at Hamilton, Ont., 5,000 tons, and the other for 5,000 tons for new buildings for the General Electric Company, at Toronto. The Hamilton order calls for deliveries to be completed by March 31, 1910. The time limit had much to do with the Carnegie Company taking the work. Bids are in on 3,500 tons of steel for elevated construction by the Interborough Railroad.

The scrap market shows little change, the situation in New England being slightly easier.

Chicago Rail Mills Filled; Western Iron Market Quieter.

CHICAGO — As anticipated in this letter of a week ago, the Chicago and Gary rail mills have reached the 500,000-ton mark in rail reservations. Steel Corporation officials admit that practically no more orders for standard rails will be taken for rolling at those plants prior to January 1. The exact total at the end of the week was about 495,000 tons, and the two plants will be asked to clean this up by the first day of the new year—a monumental task, even with the facilities at South Chicago

and the new Gary plant. Orders now on the books for track spikes and bolts also have reached unexpected totals, about 160,000 kegs of spikes and 60,000 kegs of bolts having been contracted for for next year—a third of these orders having been received since October 1.

During the week the St. Paul road ordered 16,000 tons of rails in addition to the 75,000 tons ordered the week previous. This makes a total of 91,000 tons, all for rolling at Chicago and Gary, for the one road. The mills are not so well filled on light rails, and some open capacity is still to be taken. The allotment of the Pennsylvania's recent rail order is understood to be 56,000 tons to the Illinois Steel, 27,000 tons to the Carnegie Steel, 42,000 to the Cambria, 42,000 to the Pennsylvania Steel, 19,500 to the Lackawanna and 14,000 to the Bethlehem. On account of the rush at the Illinois mills, however, it is considered certain that the Chicago mills' allotment will be turned over to the Carnegie mills, making the total for rolling at Homestead 83,000 to 84,000 tons.

Billets and plates became, if anything, scarcer in this market during the week. The pig iron situation was quieter. A leading local interest, which was quoting \$18.50 furnace, or \$19 Chicago, for first half of next year, has practically withdrawn from the market, but the prices just quoted still rule for limited tonnages. The scrap market just about holds its own.

Threat of Import of Basic Iron May Affect Philadelphia Market.

PHILADELPHIA — The trade is to have its flyer in foreign iron. News of a definite arrangement for the import of a trial order of German basic gave the domestic makers their anticipated scare during the week just ended. A steel mill in the Philadelphia district has practically closed for a 2,000-ton cargo, chill cast, to conform as closely as possible to the American product for trial in its mills. The cargo will be delivered at seaboard at \$17.50, duty paid, which is a little above \$18 at the works. Pipe makers and others affected by the present shortage in pig metal are watching this experiment with keenest interest.

Prices on No. 2X foundry settled during the week firmly at \$18.50 to \$18.85 for prompt deliveries, with prices ranging from \$19 to \$19.50 for first half of 1910, though these latter prices were shaded somewhat, a number of the contracts made on the basis of quotations for prompt shipments running well into the new year. Basic is in better demand. Several large inquiries are out for deliveries through the winter months. One order was closed for 10,000 tons, for

shipment over the next four months, at \$18, delivered. Another New York interest took 4,000 tons at the same price for October-November shipment. The market has crystallized, however, from the chaotic state which prevailed a few weeks ago, and no immediate advance is looked for—partly because of the possibility of attempted imports of foreign pig. A 2,000-ton sale of ferro-manganese for delivery over first half of 1910 reflects the market in ferro fairly accurately, though there is still considerable variance in quoted figures. Coke conditions are indicated by the purchase of 30,000 tons by the Lackawanna Steel for delivery over the first half of 1910, at \$3.

Although fabricating companies still are unable to keep up with contracts begun weeks ago and are further handicapped by the delays in deliveries of material by the mills, there is brisk competition on contracts now pending. The Norfolk & Western is soon to close on 4,500 tons of structural work at Roanoke, and the Pennsylvania Railroad is in the market for 5,000 tons of shapes and plates for car building work at the Altoona shops. The Jones & Laughlin Steel Company will supply 100 tons of sheet piling and a considerable tonnage of twisted bars for the League Island Navy yard. The Schuylkill river bridge for the Baltimore & Ohio, 2,000 tons, will be erected by the American Bridge Company.

The old materials market is quiet. Heavy steel melting scrap is bringing \$18.50 from purchasers outside the Eastern scrap combination. There still are many rumors of large purchases of scrap abroad.

Largest Tonnage of Iron Sold In Cincinnati's History.

CINCINNATI — Brokers declare the aggregate of September sales of iron in this market were the largest of any September in the history of the trade here. Much Northern iron for first half has been bought during the last 30 days. All the local interests seem to have their immediate needs well covered, and there is a lag in the demand for prompt shipment. Southern iron for immediate shipment is still to be had, it is believed, at the old \$14.50 price, though the market nominally is \$15 for last quarter and first quarter of 1910. Some of the Northern furnaces are quoting \$16.50, furnace, on first half business, though the tendency is toward \$17, and even \$17.50 for extended delivery. Some speculative iron, bought at low figures, has been coming out recently, affecting the market to some extent, though most of it is held at stiff figures. The market on old materials is badly demoralized, and a wide range is visible on

heavy melting grades and old wheels.

In their special report from Cincinnati to the Industrial World, Rogers, Brown & Company this week say:

The week has seen no let-up in the demand for pig iron for all deliveries up to July 1, 1910. It was a perfect reflection of the month before, the most active month in the pig iron market since the best days of 1907. Further advances have been registered on pig iron in various districts and this, in connection with great buying of finished products, makes the situation and outlook very strong. Advance in steel products brought out large purchases and rails with fabricated steel have been the leaders.

It is claimed that the coming year will see the greatest development yet in trolley building and the consequent increased demand for such material. The best informed are also confident that next year will be the greatest in demand for railroad supplies of all kinds and that production in steel products will outrun any previous record.

Consumers of pig iron outside of steel makers are believed to have contracted for over 600,000 tons during the month of September, and in so doing have registered one of the largest month's tonnages in foundry iron that has ever been purchased.

Again attention is unmistakably directed to the great increase in consumptive capacity which has been made during the last two years. In spite of the great September record of production there was a decrease in furnace stocks, all of it practically going into current melt. It is undoubtedly true at this time that the percentage of consumption increase which will be available by the first of next year is greatly underestimated and only slightly conceived.

Coke is stronger than ever with price advances, output in the Connellsville region somewhat decreased and all interests working their hardest for an improvement in the tonnage. Labor is cutting a large figure and making a big difference in production. Prices are on the upward move and the volume of business is excellent.

Coke Production Again On Increase; Prices Range Higher.

CONNELLSVILLE — Coke production had its weekly advance for the week ending October 2, moving from 418,956 tons to 423,819 tons, an increase of nearly 5,000 tons. Shipments increased from 13,722 to 13,858, a gain of only 136 cars, but this is due to the general influx of the new cars of larger capacity. Ovens in blast October 2, according to the "Courier's" tables, were 34,693, compared with 33,092 the week previous, out of the total of 38,559 available ovens.

The "Courier" quotes prices for prompt furnace coke at \$2.60 to \$2.75, though in truth there is little prompt coke to be had at under \$2.90 and \$3, next year's prices. The shortage of coke for immediate shipment has become more pronounced. The majority of operators are asking \$3 on all contracts for next year, and occasionally as high as

\$3.10. The \$3 price has been done on several good contracts.

George B. Irwin, secretary of the Coke Producers' Association, reports as follows:

Reports received of coke oven operations for the week ending October 2, 1909, show 38,215 available ovens in the two districts, of which 33,892 or 88.7 per cent are active, and 4,323 idle. Owing to the irregularity of the operations at many plants, due to the shortage of miners, an accurate estimate of production is difficult, but from the best information we have, production for the week was about 431,555 tons, an increase of 2,631 tons over the week before.

Labor situation continues very unsatisfactory, if anything worse than it has been. Information received from a number of works is to the effect that there are but very few plants but what are handicapped to a greater or less extent by the lack of miners or rather the continued idleness of a vast number of men for whom there is plenty of work.

The continued drouth has already interfered with operations and if it is not soon relieved, several hundred ovens will have to be put out.

All records for coal and coke shipments over the Monongahela river railroad were broken October 7, when for 24 hours there passed over the little line 570 loaded cars of coke all from the Klondike region in Westmoreland and Fayette counties. For the week there was a total of 12,000 cars moved over the railroads of the Klondike field, or a total of nearly 360,000 tons of coal and coke.

FIRES AT INDUSTRIAL PLANTS.

Philadelphia — Fat rendering plant of Arthur Gore, Stonehouse Lane and Pennsylvania Railroad, destroyed October 3. Loss, \$8,000. No water supply. Firemen compelled to ineffectually pump water from nearby ditches.

Dallas, Tex. — Warehouse of the Lincoln Paint Company, at Camp and Griffin streets, and the storeroom of the Pittsburgh Plate Glass Company, destroyed September 21. Loss \$50,000.

Cleveland — Warehouse of Superior Foundry Company, totally destroyed October 6, involving a loss of \$50,000. No patterns or machinery were destroyed. Plans are under way for rebuilding.

Breathedsville, Md. — Frame warehouse and grain elevator along Baltimore & Ohio Railroad, with 1,000 bushels wheat, destroyed October 3. Loss \$10,000.

St. Louis, Mo. — Fire October 2 at the Nat McGuire Oil & Supply Company, cost Night Watchman McNeil his life and entailed a loss of \$10,000.

Charleston, W. Va. — Plant and lum-

NEW RECORD FOR PIG IRON OUTPUT; RATE NEAR THIRTY MILLION TON A YEAR

SEPTEMBER'S pig iron output broke the top record of October, 1907, and established a new high mark for pig iron production, with a total of 2,388,988 tons for a 30-day month, a gain of 50,000 tons over October's 31 days. This is making pig iron at the rate of 28,670,000 tons a year—or a million tons better than the supposed total capacity of the country, as estimated during the earlier months of the year.

The Steel Corporation furnaces made a new record of 1,184,370 tons for the month, as against 1,102,288 tons during August, the previous high mark.

The Industrial World's table of Sep-

tember production, shows every furnace in operation in the Mahoning district on October 1, and all but one of the 50 furnaces in Pittsburgh district in blast. One new stack went in during the month, that of the Cleveland Furnace Company. Twenty more furnaces were in operation October 1 than September 1—the total being 299, as against 279 a month ago.

The pig iron output has increased more than 50 per cent since last May—the output for that month having been 1,883,330 tons. The following table shows the operations by districts:

	No. stks.	In blst.	Out blast	Product'n
New York	23	19	4	172,990
New Jersey	10	5	5	29,376
Pennsylvania, Eastern	61	41	20	183,818
Pennsylvania, Western	27	17	10	125,385
Pittsburgh District	50	49	1	548,461
Shenango Valley	20	18	2	154,287
Mahoning Valley.....	20	20	0	211,652
Ohio, Central and Northern	23	20	3	187,039
Ohio, Hocking and Hanging Rock	15	9	6	30,301
Wheeling District	14	12	2	126,750
Maryland, Virginia and Kentucky	32	14	18	64,325
Alabama	46	27	19	154,026
Tennessee, Georgia and Texas	21	11	10	27,370
Illinois, Minnesota, Wisconsin, Missouri.				
Michigan and Colorado	45	37	8	362,208
	407	299	108	2,388,988

ber yards of Kanawha Lumber Company, destroyed September 27. Loss \$35,000, with \$3,000 insurance.

Paterson, N. J. — Plant of Dolphin jute mills in Spruce street, damaged September 28. Loss \$20,000.

Passaic, N. J.—The plant of the Foxhall Brick Company, was destroyed October 4. Loss \$50,000.

Saugerties, N. Y. — Loss on plant of New York Roofing & Tile Company, \$40,000. Insurance, \$10,000.

Boston—Building of Buel & Roberts, machinists, on Buel Place, Woburn, damaged \$3,000 September 21.

Atlanta, Ga. — Woodshop of the Atlanta Agricultural Works, on the Marietta car lines destroyed September 22. Loss \$8,000.

Corsicana, Tex. — Car sheds of Corsicana Transit Company, destroyed September 25. Loss \$5,000.

Cleveland—Loss on plant of Forest City Electric Company, in Windsor avenue, Northeast, \$5,000.

Eldorado, Ark. — Woodworking plant

of Agee Wagon Works destroyed September 29. Loss \$12,000 or \$15,000; partly insured.

Berkeley Springs, W. Va. — Canning factory of B. Dawson Company, destroyed September 30. Loss \$5,000.

Trenton, N. J. — Plant of John E. Thropp & Sons Company, damaged \$2,500, September 27.

Buffalo, N. Y. — Erie railroad depot in Exchange street damaged \$5,000 September 27.

Peru, Ind. — The Parkhurst elevator works damaged \$10,000 September 23.

Marseilles, Ill. — General Roofing Plant damaged \$5,000 September 23.

Turbines for Mexico.

The Mexico Northwestern Railway Company, which recently purchased the Sierra Madre Land & Lumber Company in Chihuahua, has purchased for its properties two 500-kw. Westinghouse steam turbine electric generating outfits, together with a number of motors. The entire plant will be erected and ready for operation in about three or four months.

and Various Finished Iron and Steel Products.

Aug. 21.	Aug. 14.	Aug. 7.	July 31.	July 24	July 17.	July 12	July 5.	June 27	1908 Oct. 10
16.90@17.40	16.90	16.90	16.40@16.90	16.40@16.90	16.40	16.15@16.40	16.40@16.65	16.40@16.65	15.90@16.15
16.15@16.40	16.15@16.40	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.15@15.40
16.90@17.15	16.90@17.15	16.90@17.15	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	15.75@15.90
16.15@16.65	16.15@16.65	16.15@16.65	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.25@15.40
16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	16.15@16.40	15.90@16.15	15.40@15.65
15.15@15.65	15.15@15.65	15.40@16.15	14.90	14.90	14.90	14.65@14.90	14.90@15.15	14.90@15.15	14.40@14.65
20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	15.90@20.00	21.25@21.75
64.00@66.00	63.50@65.00	67.00@68.00	67.00@68.00	62.00@63.00	62.00@63.00	63.00@64.00	63.00@64.00	61.00@62.00	67.00@69.00
24.00@25.00	24.00@25.00	23.50@24.50	23.50@24.50	24.00	24.00	24.00	24.00	24.00	25.00@26.00
25.00@27.00	25.00@27.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	35.50@34.00
29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	30.00@30.50
43.45@44.45	42.95@43.95	43.45@43.95	43.45@43.95	43.45@43.95	43.45@43.95	42.95@43.95	42.95@43.95	41.95@42.45	45.00@46.00
14.25@14.75	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	13.75@14.25
15.00@15.50	14.50@15.00	14.50@15.00	14.50@15.00	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.25@14.75
14.50@15.00	14.00@14.50	14.00@14.50	14.00@14.50	14.00	14.00	13.75@14.00	13.75@14.00	13.75@14.00	13.75@14.25
13.75@14.50	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75
13.00@13.50	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.25@12.75
13.50@14.00	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	12.00@12.50	13.00@13.50
13.50	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00	11.50@12.00	13.00@13.50
12.00@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	12.50@13.00
11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	12.00@12.50
11.25@11.75	11.25@11.75	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.50@11.00	10.50@11.00	11.50@12.00
17.00@17.50	17.00@17.50	16.50@17.00	16.50@17.00	16.00@16.50	16.00@16.50	16.50@16.75	16.50@16.75	16.75@17.00	16.75@17.00
17.00@17.50	17.00@17.50	15.50@15.75	15.50@15.75	15.50@15.75	15.50	15.50	15.50	15.50	15.75@16.00
16.00@16.50	16.00@16.50	15.25	15.25	15.25	15.25@15.50	15.25@15.50	15.25@15.50	15.25@15.50	15.50@15.75

24.00	24.00	24.00	24.00	23.00@24.00	23.00	23.00	23.00	23.00	25.00
26.00	26.00	26.00	26.00	25.00@26.00	24.00@25.00	24.00@25.00	23.50@24.00	23.50@24.00	25.00
28.00	28.00	28.00	28.00	28.00	26.00@28.00	25.00@27.00	25.00	25.00	27.00
25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	27.50
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.00
28.00	28.00	28.00	27.00	27.00	27.00	25.50@27.00	25.50@27.00	25.50@27.00	23.00@25.00
29.00	29.00	28.00	27.00@28.00	27.00@28.00	27.00@28.00	26.50@27.00	26.50@27.00	26.50@27.00	24.00@26.00
30.00	30.00	30.00	29.00	29.00	29.00	27.75@28.75	27.75@28.75	27.75@28.75	27.00@28.00
31.00	31.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00	29.00	29.00	31.00@32.00
31.00	31.00	31.00	31.00	29.00@30.00	29.00	29.00	29.00	29.00	33.00
31.00	31.00	31.00	31.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	34.00
27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	25.50

26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	29.00@30.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	30.00@32.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	34.00@36.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	50.00
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	71.00
28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	32.00
30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	34.00
28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	32.00
30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	34.00
29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00	27.00	33.00
29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00	27.00	32.00
28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	26.00	32.00
30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	34.00
28.00@30.00	28.00@30.00	28.00@30.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	32.00
30.00	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	28.00	34.00
30.00	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@30.00	28.00@30.00	36.00
24.00	24.00	24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	24.00	24.00	28.00
27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	28.00
27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	24.00@25.00	28.00
30.00	29.00	29.00	29.00	29.00	29.00	28.00@29.00	29.00	29.00	28.00

STEEL PLATES.

Base prices, tank quality, ¼-in. thick, per 100 lbs., f. o. b., Pittsburgh:

6¼ to 100 inches wide\$1.50

Extras over base price—

3-16 inch thick .....	.10
Gauges 7 and 8 .....	.15
Gauge 9 .....	.25
Gauges 10 and 11 .....	.25
Circles .....	.20
Sketches .....	.10
Boiler and Flange quality .....	.10
Marine Steel .....	.40
Widths over 100, to 110 in .....	.05
Widths over 110, to 115 in .....	.10
Widths over 115, to 120 in .....	.15
Widths over 120, to 125 in .....	.25
Widths over 125, to 130 in .....	.50
Widths over 130 in	1.00

IRON AND STEEL SCRAP.

Old steel rails, re-rolling..	\$18.50	\$18.75
Old steel rails, remelting..	17.75	\$18.50
Steel axles	21.50	22.00
Heavy melting scrap	17.50	18.00
Low phosphorus	21.00	21.50
Sheet scrap	15.25	15.75
No. 1 wrought scrap	19.00	19.25
Machine shop turnings ...	13.00	13.50
Cast borings	11.00	11.50
No. 1 cast	16.25	16.50
Old car wheels	17.75	18.00
Old iron rails	18.50	19.00
Axle turnings	14.00	14.50
Railway malleable	17.00	17.50

TIN AND TERNE PLATES.

Official prices, f. o. b., Pittsburgh—
Coke tins:

14x20, I. C.	\$3.65
14x20, 100 lbs.	3.50
14x20 95 lbs.	3.45
14x20, 90 lbs.	3.40

Charcoal tins:

A Grade, 14x20, I. C.	4.15
A Grade, 14x20, 100 lbs.	4.00

Ternes:

20x28, I. C.	6.80
20x28, 200 lbs.	6.50

STEEL RAILS.

Fifty pounds and Heavier—

50-ton lots and over	\$28.00
Car load lots	30.00
Less than car load lots	32.00

Light Rails—

12 and 14 pounds	\$30.00
16, 20 and 25 pounds	28.00
30 and 35 pounds	28.00
40 and 45 pounds	28.00

Relaying Rails

Subject to inspection, f. o. b. Pitts-

Stand'd 50 lbs. & heavier..	\$22.00	\$22.50
25 to 40 lbs.	23.00	23.50
16 to 20-pound rails	24.00	24.50
12-pound rails	25.00	26.00

STEEL SHEETS.

Official prices, per 100 lbs., f. o. b., Pittsburgh—

Gauge.	Black.	Galv.
30	\$2.35	\$3.55
29	2.30	3.45
28	2.30	3.35
27	2.25	3.15
25-26	2.20	2.95
22-24	2.15	2.75
17-21	2.10	2.60
15-16	2.05	2.50
13-14	2.00	2.40

Blue Annealed.

10 and heavier	\$1.70
11-12	1.75
13-14	1.80
15-16	1.90

Corrugated Roofing.

Per square, 28 gauge, f. o. b. Pitts-

Painted	\$1.55
Galvanized	2.80

WIRE AND NAILS.

Prices to jobbers in car load lots, per 100 lbs.; retailers 5 cents additional:

Wire nails	\$1.80
Plain wire	1.60
Painted barb wire	1.80
Galvanized wire	2.10

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per cent pure are held at 24c per pound in ton lots.

For small lots of 100 pounds and over advances of 3c per pound are charged.

Rods and wirebase price 31 cents
Sheetsbase price 33 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

	Per Ton.
Mine-run	\$1.10@1.20
¾-inch lump	1.20@1.30
1¼-inch lump	1.30@1.40
3-inch lump	1.55@1.65
1¼-inch nut	1.10@1.20
¾-inch slack .....	.55@ .65

At Buffalo—

	Pgh.	Frep't
Mine-run	\$2.35	2.05
¾-inch lump	2.45	2.15
1¼-inch lump	2.55	2.25
¾-inch slack	1.85	1.70

At Cleveland—

	Pgh.	No. 8
Mine-run	\$2.10	\$1.80
¾-inch lump	2.20	1.90
1¼-inch lump	2.25	2.00
1¼-inch nut	2.10	1.80
¾-inch slack	1.55	1.45

At Detroit—

	\$2.50	\$2.05
Mine-run	2.50	2.15
¾-inch lump	2.70	2.25
1¼-inch nut	2.50	2.05
¾-inch slack	2.00	1.65

At Chicago—

	\$3.00	\$2.55
Mine-run	3.10	2.65
¾-inch lump	3.20	2.75
1¼-inch nut	3.00	2.55
¾-inch slack	2.45	2.25

MERCHANT PIPE.

Base discounts, car load lots, subject to one point and 5 per cent extra to large jobbers.

	Steel	Black.	Galv.
¾ and 1-inch	71	55	
¾-inch	72	58	
½-inch	75	63	
¾ to 6-inch	79	69	
7 to 12-inch	74	59	
Extra strong plain ends—			
½ to ¾-inch	64	52	
½ to 4-inch	71	59	
4½ to 8-inch	67	55	
Double extra strong—			
½ to 8-inch	60	49	

WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe car load prices to consumers; prices to jobbers one point and 5 per cent.

¼-inch	66	
½ and ¾-inch	67	53
½-inch	70	58
¾ to 6-inch	74	64
7 to 12-inch	69	52
Extra Strong and Plain Ends—		
½, ¾ and 1-inch	59	47
½ to 4-inch inclusive	56	54
4½ to 8-inch, inclusive	62	50

Double Extra Heavy plain Ends—

½ to 8-inch, inclusive	55	44
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BOILER TUBES.

	Steel	Iron
1 to 1½ inches	49	43
1¾ to 2¼ inches	61	43
2½ inches	63	48
3¾ to 5 inches	69	55
6 to 13 inches	60	43

Less than car load lots, two points less.

2½ inches and smaller, over 18 feet, 10 per cent, net extra.

2¾ inches and larger, over 22 feet, 10 per cent net extra.

MERCHANT STEEL.

Cold rolled and ground shafting, 60 per cent off, car load lots; 56 per cent off less than car load lots; delivered in base territory:

Planished Tire Steel	\$1.40@1.50
Iron finish, up to 1½x½ in. ..	1.35@1.45
Iron finish, 1½x½ in. and over	1.20@1.30
Toe Calk Steel	1.70@1.80
Railway Spring Steel	1.75@1.85
Cutter Shoe	1.95@2.05
Flat Sleigh Shoe	1.55@1.65
Crucible Tool Steel	7.00@8.00
Open-Hearth Spring Steel ..	2.05@2.30

Freight Rates On Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig Iron, from Virginia furnaces to Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	\$2.35	\$3.60	\$3.20	\$2.35	\$3.30	\$3.35
Bristol	4.35	3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.90	2.35	3.60	3.20	3.00	4.00
Kayula, Ivanhoe, Rural Retreat ...	2.90	2.35	3.60	3.20	3.40	4.35
Pulaski, E. Radford, Max Meadows. 2.90	2.35	3.60	3.20	3.25	4.20	4.25

Pig Iron from Birmingham, Ala., tons of 2,240 lbs. to—	Cleveland ...	1.65
Boston, by water	Columbus	1.65
Chicago	Cincinnati	2.10
Cincinnati and Ohio River	Chicago	2.65
Cleveland	East St. Louis	2.80
Milwaukee and Northwest	Hamilton, Ont.	2.20
New York, all rail	Joilet	2.65
New York, rail and water	Louisville	2.65
Philadelphia, all rail	New York	2.85
Philadelphia, rail and water	Pittsburgh .....	.80
Pittsburgh	Philadelphia	2.15
St. Louis	Richmond, Va.	3.04
To Pittsburgh from—	Toledo	2.25
Dunbar Furnaces	Valley Furnaces	1.35
Kittanning Furnaces		
Scottdale Furnaces		
Valley Furnaces		
Wheeling		
Valley Furnaces to—		
Cleveland		

TIN PLATE.

	C.L.	L.C.L.
Per 100 lbs., Pittsburgh to—		
Boston, Mass	18	21
Albany, N. Y.	16	19
Baltimore, Md.	14½	17½
Birmingham, Ala.	41	68
Cleveland, O.	10	13
Columbus, O.	12	15
Cincinnati, O.	15	18
Concord, N. H.	18	21
Charlotte, N. C.	39	61
Charleston, S. C.	33	70
Charleston, rail and water..	23½	31
Covington, Ky.	15	18
Chattanooga, Tenn.	33	65
Chicago, Ill.	18	21
Canadaigua, N. Y.	13½	16
Des Moines, Ia.	37½	48½
Detroit, Mich.	15	18
Denver, Mich.	84	118
Dover, Del.	17	20
Buffalo, N. Y.	11	13
East St. Louis	22½	26
Hartford, Conn.	18	21
Indianapolis, Ind.	17	19½
Louisville, Ky.	18	21
Montpelier, Vt.	21	24
Minneapolis, Minn.	32	42
New York	16	19
Norfolk, Va.	20	24
Natchez, Miss.	32	61
Portland, Me.	18	21
Providence, R. I.	18	21
Philadelphia, Pa.	15	18
Richmond, Va.	20	24
Rochester, N. Y.	11½	13½
Syracuse, N. Y.	13½	16
St. Louis, Mo.	22½	26
Terre Haute, Ind.	18	21
Topeka, Kas.	54½	68
Trenton, N. J.	16	19

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	BILLETS.
Baltimore	\$2.15	\$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville .....	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va. ....	.90	1.00
Youngstown .....	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango Valleys ..	1.00	
Wheeling	1.00	

COKE.

From Connellsville region, per 2,000 pounds to—	11.00
Boston	\$3.50
Buffalo	1.00
Baltimore	2.15

FINISHED PRODUCTS.

Finished Steel Products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire, nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—	
Albany .....	.16
Buffalo .....	.11
Boston .....	.18
Baltimore .....	.14½
Canandaigua .....	.13½
Cleveland .....	.10
Columbus .....	.12
Cincinnati .....	.15
Chicago .....	.18
Harrisburg .....	.14½
Louisville .....	.18
New York .....	.16
Norfolk .....	.20
Philadelphia .....	.15
Rochester .....	.11½
Richmond .....	.20
Scranton .....	.15
St. Louis .....	.23
Washington .....	.14½
To Pittsburgh from—	
Mahoning and Shenango Valleys..	.05
Wheeling .....	.05

COAL.

Coal Rates from Mines—	
To Ashtabula	\$1.00
To Allegheny, Pan'dle Ft. W. trk...	.43
To Allegheny, West Penn tracks..	.48
To Allegheny, B. & O. ....	.35
To Pittsburgh, P. R. R. Main Line..	.43
To Pittsburgh, B. & A. V. Div...	.48
To Pittsburgh, B. & O. ....	.33
To Valleys .....	.70
To Buffalo	1.25
To Cleveland	1.00
To Detroit	1.40
To Chicago	1.90
To New York, gross ton	2.25
To Philadelphia, gross ton	2.00

From Freeport—	
To Buffalo	1.10
For Lake Shipments— Cargo. Fuel.	
To Ashtabula .....	.88
To Cleveland .....	.88
To Erie .....	.88

West Virginia rates from mines—	
To Chicago	1.90
To seaboard points, gross ton	1.80

From No. 8, of Ohio—	
To Cleveland .....	.90
To Chicago	1.65
To Detroit	1.14

Chicago Railroads Await City's Edict On Electrification; Millions at Stake

COUNCILMANIC COMMITTEE HAS NEW ORDINANCE, WHICH IS SWEEPING IN ITS PROVISIONS. BASIS FOR CITY'S CLAIM OF POLICE POWER.

Councilmanic committees in Chicago still have under consideration the ordinance introduced in Chicago councils, September 27, aiming to compel every railroad of the city to substitute electricity for steam as a motive power by January 1, 1912. The committee on local transportation has charge of the measure, which will probably be reported back without material change, and the issue fought out on the floor of councils.

Though the ordinance created a sensation in the East, Chicago railroad managers claim not to view the situation with any great alarm. There are within the city limits approximately 2,300 miles of railway tracks, including everything, and about four-fifths of this mileage is within the eight-mile limit. Figured at \$70,000 per mile it would entail an expenditure of about \$140,000,000 to carry out the provisions of the measure. Some of the railroad systems which would be hit the hardest by the measure, and the estimated cost in each case are as follows:

Illinois Central, \$18,000,000; Pennsylvania, \$25,000,000; Western Indiana (five roads), \$35,000,000; Rock Island, \$20,000,000; Northwestern, \$15,000,000; St. Paul, \$10,000,000; Burlington, \$40,000,000; Lake Shore, \$20,000,000.

About 15 years ago a similar agitation was developed in Chicago, in regard to the elimination of grade crossings by means of track elevation. A general mandatory ordinance was passed, compelling track elevation throughout the city. It has been used from time to time to force certain railroads to take up the work. A similar plan of procedure would in all likelihood be carried out in the electrification work.

Some of the roads, notably the Chicago & Northwestern Railway and the Illinois Central, are evidently suggesting a compromise in the partial electrification of their terminals. It is understood the Illinois Central management will make the objection that its suburban traffic does not yield sufficient revenue to justify the purchase of electric equipment throughout.

Chicago & Northwestern Railway officials are now gathering electrification data. Meantime the Illinois Central's management has submitted charts for partial electrification to the Chicago of-

ficials, including plans to separate the passenger and freight tracks by tunnels, and these plans will be either accepted or rejected by the directors at their next meeting.

The general plan for the Illinois Central contemplates the electrification in six sections, in order to prevent delays in the entire service during the progress of the work.

The text of the ordinance now pending in Chicago councils follows:

Be it ordained by the city council of the city of Chicago:

Section 1—That after January 1, 1912, every railroad company shall operate and propel any and all cars on trains within a radius of eight miles of the city hall in the city of Chicago by electrical power.

Section 2—Every railroad company now operating or propelling cars or trains of cars in the city of Chicago or now authorized by ordinances so to do shall within one year after the passage, approval, and publication of this ordinance, submit to the commissioner of public works of the city of Chicago plans and specifications for operating and propelling all of its cars or trains of cars in the city of Chicago by means of electrical power, as in section 2 of this ordinance provided. If the manner in which any railroad proposes to operate its cars by means of electricity, as indicated by said plans and specifications, is one which, in the judgment of the commissioner of public works, is reasonably safe, the commissioner of public works shall approve said plans and specifications, and thereafter the railroad company presenting plans and specifications so approved shall proceed within six months to electrify its line of road as in and by plans and specifications provided, and shall continue said work with reasonable diligence.

Section 3—No railroad company shall propel or operate any car or train of cars within a radius of eight miles of the city hall, in the city of Chicago, by means of any power other than that of electricity any time after one year from and after the passage, approval and publication of this ordinance, unless at the time of so doing it shall have submitted plans and specifications to the commissioner of public works, as by section 2 of this ordinance provided, and such plans and specifications shall have been approved by the commissioner of public works.

Section 4—Any railroad company which shall violate any of the provisions of this ordinance shall be fined in a sum not exceeding \$200, and every day that any railroad company shall continue to violate any of the provisions of this ordinance shall be regarded as a separate offense and punished by a fine of not exceeding \$200.

Section 5—This ordinance shall be in force and effect from and after its passage, approval, and publication.

Some effort has been made for both state and municipal legislation directed

at the Illinois Central Railroad specifically, but it has been realized that to make such measures effective they must be discriminatory.

The ordinance was drawn with the advice and consent of the corporation counsel. The forty-ninth section of section 8 of the old city charter, in providing the powers of the city, stipulated among others this privilege:

To regulate and prohibit the use of locomotive engines within the city and require railroad cars to be propelled by other power than that of steam; to direct and control the location of railroad tracks, and to require railroad companies to construct at their own expense such bridges, tunnels, or other conveniences as public railroad crossings as the common council may deem necessary; also to regulate the running of horse railway cars, the laying down of tracks for the same, the transportation of passengers thereon, and the kind of rail to be used.

Upon the ground that the city, to abate the smoke nuisance, may use its police powers and force electrification, Alderman Snow thinks that the city has a weapon to use on the railroad companies. Alderman Snow admits that he has no idea that the framers of paragraph 49, of section 8, possessed any inkling of a supposition that some time the city would want to force the steam railroads to change their locomotives for electric motor engines of some description. The history of the paragraph, it is thought, will disclose that the generation in control of affairs in 1863 wanted to shut off certain interests from running steam cars along what is now Cottage Grove avenue, for fear that seven miles an hour would be a dangerous speed.

PLAN CHICAGO MERGER.

Proposed to Unite Transportation Light and Power Interests.

Announcements came out of Chicago during the week of a proposition to consolidate Chicago public utility corporations by a group of local and New York financiers. This amalgamation of business interests will represent a capitalization of nearly \$300,000,000. The proposition includes the consolidation of the surface street car lines, the elevated railroads, the Commonwealth-Edison Company and subsidiary interests into a great corporation that will control the business of local transportation and the production of electric light and power. It is proposed to reorganize the transportation systems of the city along lines that the authors of the plan promise will effect the reforms demanded for many years by the traveling public and by the city government.

That part of the project which may involve it in political issues is the provision that the consolidated corporation shall become the licensee of the city

under the terms of the traction settlement ordinance authorizing the city council to designate any individual or corporation to purchase the property of the street car companies at the terms upon which the city would purchase, together with a bonus of 20 per cent.

The committee of Chicago financiers considering the project and the interests they represent are:

Samuel Insull, president of the Commonwealth Edison Company.

John J. Mitchell, president of the Illinois Trust & Savings Bank.

John A. Spoor, chairman of the executive committee of the city railway.

Henry A. Blair, director of the Commonwealth Edison Company, and of the Chicago Railways Company.

Chauncey Keep, director of the Northwestern Elevated Railway Company.

Wallace Beekman, director of the Chicago Railways Company, and of the South Side Elevated Railway Company.

W. H. Eisenroth, director of the Chicago Railways Company.

The principal component companies of the proposed merger and the investments in plant account, etc., each represents now are as follows:

Commonwealth-Edison, \$51,657,050.
City Railway, \$37,526,505.
Chicago Railways, \$47,597,888.
Calumet & South Chicago, \$5,417,461.
Northwestern Elevated, \$32,533,661.
South Side Elevated, \$12,346,800.
Metropolitan Elevated, \$32,265,152.
Oak Park Elevated, \$17,889,568.
Total, \$237,234,089.

Press reports declare Wall street interests have agreed to finance the merger.

OHIO TROLLEY CHARTERS.

Pomeroy's Municipal Road.

The Secretary of State at Columbus, O., last week granted charters for two railroads, to be located in different parts of the State. The Pomeroy Belt Railway has an authorized capital stock of \$150,000, while the Toledo & Findlay has an initial capital of \$10,000. The former is already constructed and is owned and operated by the city of Pomeroy, having an extension to Portland, Meigs county. It is said that the line was purchased indirectly for the Hocking Valley Railroad, to be made a part of the system.

The Toledo and Findlay line will have its terminal at Toledo and Findlay, passing through Maumee and Perrysburg. Both are electric lines.

Trolley men on Corporation Tax.

Interviews with officials of the larger street railway and interurban lines of the country represented at the convention of the American Street Railway and Interurban Railway Association, which opened at Denver, last week, indicated that a vigorous assault on the proposed corporation tax would be a feature of

New Rapid Dumping Steel Ore Car

Charles H. Clark, president of the Clark Car Company, Frick building, Pittsburgh, and inventor of a rapid dumping steel ore car, returned last week from Marquette, Mich., where a test had been made by the officials of the D. M. & N. Railway, with a number of makes of rapid dumping cars, to

and in the test was emptied in 28 seconds with the power attachment, and by hand power in 1.65 minutes. The Racousky car is dumped by pneumatic power only and was unloaded in 7.17 minutes. The Summers car is built in two styles, for pneumatic or for hand power. It was unloaded by power in 8.31



The New Clark Car, Now Being Tried Out in the Michigan Ore Fields.

obtain data as to the efficiency of cars of different designs. Mr. Clark states that his car, a view of which is reproduced herewith, fulfilled all claims made for it and on each of the several tests made was unloaded in considerably less time than any of the other cars tested.

The Clark car is designed to be dumped by pneumatic power or by hand,

minutes and by hand in 8.21 minutes. The Chicago & Northwestern car was next in point of time, requiring 55.64 minutes.

The weight of the Clark car is 32,000 pounds and the capacity 100,000 pounds. The cost of the car is practically the same as that of the other power dumping cars on the market.

the resolutions offered at the meeting.

The income tax amendment will also come in for its share of discussion. Convention leaders, however, declare there is unanimity against the corporation tax, whereas a difference of opinion exists concerning the merits of the income tax. Six thousand delegates attended the convention. They represent \$5,000,000 in capital invested in street railway enterprises.

Trolley Project at Uniontown.

Representatives of William Stone, William Allison and T. J. Mitchell applied to the Uniontown, Pa., council last week for a street car franchise from the center of the borough toward the north. It is provided that the company will be ready to operate by July 1, 1911; and that power will be received from a power

house that will be erected within 18 months after the franchise is granted. It is the intention to construct a line that will cover the Redstone valley as far as Smock and Grindstone. Rights of way through many of the properties have been secured.

To Extend to Morgantown.

A franchise has been granted the Morgantown & Dunkard Valley Electric Railway Company to extend its lines from Blackville, W. Va., to Morgantown, work to be started at once and to be completed in two years.

New Power Station for Marietta.

The Parkersburg, Marietta & Interurban Railway company will begin at once the task of remodeling and improving their power station at Marietta. It

is the intention to make this their central station, and it will be the biggest thing of the kind in the upper Ohio valley. It is the intention of the management to handle all of the Marietta lines, the Muskingum division and a portion of the Parkersburg line from the Marietta station.

SHOPS AT RICHMOND, IND.

Pennsy Completes Terminal Plan.

Pennsylvania Railroad officials have announced that plans have been accepted to concentrate a number of repair shops at Richmond, Ind., thus utilizing real estate owned at that place and putting the shops' facilities in a position to better handle the work required of them. Included in this improvement will be a car-building plant of great capacity. According to the present plans the company will move the Bradford (Ohio) shops to Richmond, and in addition will move a part of the Logansport works and several smaller repair plants from the J. M. & I. It is proposed to locate the plant east of the city, where a site of about 100 acres is owned by the railroad company. To this equipment will be added the G. R. & I. shops, now in operation at Richmond. The new site has been acquired by the company in the past five years. It is in a desirable location for railroad shops.

For B. & O. Cut-Off.

Final surveys have been made by the Baltimore & Ohio railroad for a cut-off from Sharpsburg, Allegheny county to a point on the main line at North Sewickley, Beaver county, for the purpose of eliminating the heavy Bakerstown grade. It is understood the proposed section of track is for freight and through passenger service only and that the old line through Bakerstown, Valencia, Mars, Evans City, Harmony and Zelienople will be used by passenger trains and trains for the Butler and Foxburg branch, as well as the Buffalo, Rochester & Pittsburgh. Officials say the elimination of the Bakerstown hill on the main line of the road will mean a saving of many thousands of dollars every year. The grade is so heavy that pushers are required for big hauls and the loss from wrecks is large.

Double-Tracking the Big Four.

Double tracks are to be laid by the Big Four on the Cleveland & Indianapolis Divisions out of Bellefontaine, O. The work was started several years ago from both the Indianapolis and Cleveland ends, but when hard times came the work was stopped. Now the lines are handling more freight than for many years, and the double tracking is to be resumed.

LIFT COAL DIFFERENTIAL.

Discriminating Rates Removed Pending Court Decision.

In compliance with an order of the interstate commission, the freight differential on George's Creek big vein coal for tidewater delivery, which was 15 cents a ton in excess of the rate for coal shipments from the Somerset and certain fields in West Virginia, of which are longer hauls has been discontinued until such time as the question of the authority of the commission to make the ruling has been finally determined in the Federal courts. This was deemed preferable to running the risk of each carrier having to pay a penalty of \$5,000 a day.

In the meantime, the 20 railroads interested, including the Pennsylvania, Baltimore & Ohio and Western & Maryland, are proceeding with their right in the United States district court in Philadelphia, where, on last Tuesday, arguments were heard on the application for an injunction restraining the commission from enforcing its order.

Because of the removal of the differential, one mining company at Barton, Allegany county, Md., which has been idle for a year, is preparing to start up. It is understood that other companies will do likewise.

Attack Morgan Coal Roads.

At New Lexington, O., last week, the prosecuting attorney of Perry county filed an action in quo warranto in court against the Toledo & Ohio Central Railway Company, demanding that commissioners be appointed to wind up its affairs. The company is charged with entering into a conspiracy with the Hocking Valley Railway, a parallel and competing line, to control passengers and freight and through illegal operations monopolizing the mining and shipping of coal to the injury of other coal operators and the public.

The petition cites the recent report of the Interstate Commerce Commission on the Hocking Valley and allied roads. The action follows the line of other attacks against the J. P. Morgan combination, which includes the Hocking Valley, Toledo & Ohio Central, Kanawha & Michigan and Zanesville & Western railroads and the Continental Coal Company, Kanawha & Hocking Coal & Coke Company, and Sunday Creek Company, but comes from a new source.

There is evidence in the petition that the action is backed and instigated by the independent coal operators in the Hocking Valley and possibly by the State association of coal operators.

Canadian Pacific Double Track.

The new double track on the Ca-

nadian Pacific between Winnipeg and Fort William, B. C., was completed recently, and Sir Thomas Shaughnessy's special train was the first to run over it.

In an interview in Winnipeg Sir Thomas stated that the company was continuing its work of extension in the West and East alike. In the past three years, 1,500 miles of new track had been built, and in the past six years more than \$40,000,000 had been spent on equipment. The new double track cost 25 per cent more than had been anticipated, but it is now absolutely complete and is as good a road as could possibly be built.

TERMINAL PLANS.

Start Work at Kansas City.

The directors of the Kansas City Terminal Railway Company, the corporation that is to build and operate the new \$20,000,000 Union Passenger station and terminals in Kansas City, brushed aside all remaining clouds at a meeting October 5, in the offices of President Winchell, of the Rock Island, by accepting the ordinance ratified by popular vote at a special election in Kansas City September 9. This action by the directors is believed to make it a certainty that dirt will be flying on the project within 60 days, and sooner if the necessary details of acquiring about \$2,000,000 worth of property in the vicinity of the site chosen for the station, awarding the contracts for the terminals, and approving the plans being redrawn by Architect Jarvis Hunt, of Chicago, for the building, can be carried out without delay.

A Step in the Memphis Project.

A Union Depot at Memphis, Tenn., to accommodate five railroads certainly and other lines if they wish to come in will be built by the Memphis Union Station Company, which has filed application for a state charter. The cost will be at least \$2,000,000, although plans allow the expenditure of \$3,000,000 to provide for the other roads, should they decide to enter.

The railroads in the new terminal company are Louisville and Nashville, Nashville, Chattanooga and St. Louis, the Southern, the Iron Mountain and the Cotton Belt. The incorporators are Milton H. Smith, President Louisville and Nashville; John W. Thomas, Jr., President Nashville Chattanooga and St. Louis; Fairfax Harrison, Vice President Southern; C. W. Nelson, Assistant General Manager Cotton Belt, and J. L. Lancaster, President Union Railway Company, representing the Iron Mountain interests.

Making Mexican Rails at Home.

A contract for 12,500 tons of steel rails and accessories has been made with

the Monterey Steel Works by the National Railways of Mexico. The rails are to be 85 pounds and delivery of all the materials is to be made by January 1. Last year the National Railways placed an order with this company for 20,000 tons of rails.

ORDERING NEW CARS.

Harriman Equipment Contracts in Six Months Total \$17,000,000.

The announcement was made in Chicago last week that the Union Pacific had ordered 1,500 steel underframe refrigerator cars. Harriman equipment orders in the last six months have amounted to \$17,000,000.

The Westmoreland Coal Company has placed an order with the Cambria Steel Company, for 100 gondola and 100 steel underframe hopper cars.

The New York Central is in the market for 4,000 box cars.

The Pressed Steel Car Company is shipping daily from its McKees Rocks plant about 35 cars for the Denver & Rio Grande, which is part of an order which was placed some months ago. The cars are of small gondola type. About 60 cars a day are being sent out altogether by the plant.

New freight cars and locomotives ordered some time ago by the Buffalo, Rochester & Pittsburgh Railway Company from the Standard Steel Car Company

are being delivered and will be placed in service on the Indiana branch.

Novel Lock for Cars.

Thomas E. Flint, of East Syracuse, has invented a lock, which he believes will stop freight-car burglaries everywhere, says the Syracuse, N. Y., "Post-Standard." The device is self-locking, and to open the door of the car air must be forced into the lock by means of a small hand pump. The lock is so constructed that only pumps specially constructed will fit. The inventor's plan is that pumps be distributed with freight agents of the railroads.

Installing Automatic Stokers.

The Clover Leaf-Alton has just installed automatic stokers on its locomotives. Ten were first installed and these proved so satisfactory that 26 more locomotives, including all the fast passenger locomotives between Toledo, Chicago, Kansas City and St. Louis have been so equipped. The automatic stokers work evenly with all grades of coal and in the end there is a saving of fuel.

Increasing Car Business.

In a financial statement to its stockholders, the American Car & Foundry Company, makes the assertion that from not having enough business last year to keep its plants going at half capacity, the company is now running at well up to-

wards 90 per cent. Several of the mills, too, have been overhauled during the dull period, and the whole plant brought up to a higher state of efficiency. The Pressed Steel Car and Railway Steel Spring Company, are getting their share of the big orders, but both were so sharply affected by the panic and the following depression that it is likely to be some little time before anything is paid out on the common stocks of either.

\$8,000,000 Road for Colorado.

There has been organized in Colorado a power and railroad company capitalized at \$8,000,000 to build a standard gauge electric line from Pueblo to the San Luis Valley, a large area of which is to be drained of seepage water that is not fit for agricultural purposes. The company is also to build a plant to furnish its own power for operating the road, and to pump for both drainage and irrigation purposes.

Railroad Buys Old Foundry.

Reports from Harrisburg, Pa., say the Philadelphia & Reading Railway Company has completed negotiations for the purchase of the old Harrisburg Foundry & Machine Works at Fourteenth and Howard streets, that city, the price agreed upon, it is said, amounting to \$100,000. The buildings will be used for freight houses, and additional sidings will be put in.

Corporations to Which Charters Have Been Granted Recently

PENNSYLVANIA.

Winner Natural Gas Burner Company. \$10,000. Treasurer: A. L. Petty, Jr., 1156 Frick annex, Pittsburgh. Directors: A. L. Petty, Jr., W. L. McKay, C. G. Kiskaddon, Pittsburgh.

Bentleysville Electric Light, Heat & Power Company; \$15,000. Treasurer: E. E. French, Ellsworth, Pa. Directors: J. G. McCormick, Nicholas Veaser, Bentleysville, Pa.; Charles F. Fisher, Pittsburgh; E. E. French, George C. Schlehr, Ellsworth, Pa.

Ewing Automobile Company; \$10,000. Treasurer: Levi E. Ewing, Cleveland, O. Directors: Levi E. Ewing, Cleveland, O.; James W. Fox, Charles B. Brunner, Easton, Pa.

Harleigh Coal Mining Company; \$30,000. Treasurer: J. D. Huddell, 1 Broadway, N. Y. Directors: Thomas White, Harry Ellis, Philipsburg, Pa.; J. D. Huddell, New York.

Keystone Gas Fixture Works; \$10,000. Treasurer: E. L. Rhodes, 23 E. Orange street, Lancaster, Pa. Directors: A. A. Wylie, E. L. Rhodes, A. W. Rhodes, all of Lancaster, Pa.

NEW YORK.

Blake Sprayer & Foundry Company, Rotterdam, N. Y.; manufacturing machinery and founding any part of machinery; mining; manufacturing, and treat metals; \$50,000. Frank A. Blake,

Angus C. MacCall, both of 148 Cutler building; Daniel W. Forsyth, No. 434 Powers building; Daniel W. Forsyth, No. 434 Powers building, all of Rochester, N. Y.

E. Alexander, incorporated, New York; manufacture electric lamps and electric articles; \$10,000. Focsaneanu Alexander, Louis Liebes, 61 Fulton street; John M. Raymond, 61 Nassau street, New York.

Cayuga County Cold Storage & Warehouse Company, Auburn, N. Y.; cold storage and refrigeration, manufacture ice; \$60,000. Vinson C. Welch, Erwin W. Andrews, T. L. Gorman, Syracuse, N. Y.

B. Sel & Company, New York; sheet iron, tin, metals, steel and iron; \$55,000. Benjamin Sel, Nutley, N. J.; Leon Lanowitz, 150 West One Hundred and Eighteenth street, New York; Nathan Friedman, 236 Reid avenue, Brooklyn.

The Paragon Machine Company, Rochester, N. Y.; manufacture blue printing machinery, appliances, fixtures and materials for same; \$3,000. H. Hewes, Sullivan, Warren L. Sullivan, 34 Fillmore street; Robert McKeegan, 322 Reynolds street, all of Rochester, N. Y.

Grasso Neverslip Quoin Company, Brooklyn; manufacture printers' quoins and other machinery and tools for printing, etc.; \$50,000. Nicholas Grasso, Anthony Grasso, 254 Liberty avenue,

Brooklyn; Emerson P. Jennings, Jr., 15 Maiden Lane, New York.

Wallabout Brass Foundry, incorporated, Brooklyn; brass foundry; \$2,000; E. J. Forhan, J. J. Harper, H. M. Browne, 154 Nassau street, New York.

Dilworth Towne & Lockwood, White Plains, N. Y.; deal in steel, iron and metals; also tools, hardware and machinery; \$100,000. Timothy A. O'Leary, Jason G. Lamison, Michael J. O'Leary, 2 Rector street, New York.

Leone Electrical Improvement Company, New York; general contracting, electrical work; \$50,000; Pasquale Leone, 361 West Forty-sixth street; John Cogiano, 81 East One Hundred and Twenty-fifth street; Alfonso Castelli, 276 West Thirty-eighth street; Felipe Suriani, 335 West Eighty-seventh street, New York.

Howard A. Pierce Electric Light Company, Hamburg, N. Y.; electric light, heat and power; \$30,000; Howard A. Pierce, Elizabeth Pierce, Laura S. Frank, all of Hamburg, N. Y.

John P. Ley & Company, New York, manufacture and deal in furnaces, heaters, ranges, stoves, etc.; \$10,000; John P. Ley, William S. Ley, both of Elizabeth, N. J.; Walter Richards, 1383 St. Johns Place, Brooklyn.

Midland New York Company, New York; manufacture automobile motors,

engines, etc., cars, carriages, boats and vehicles, etc.; \$50,000; J. Mora Boyle, Bronxville, N. Y.; Albert F. Britton, 7 West One Hundred and Third street; E. Mortimer Boyle, 821 Riverside Drive, both of New York.

Crumen-Caldwell Company, Lackawanna, N. Y.; manufacture machines for making concrete block and bricks; \$6,000; Frank D. Caldwell, Lackawanna, N. Y.; Charles W. Getman, Buffalo, N. Y.; John J. Crumlish, Hamburg, N. Y.

Chester Manufacturing Company, Yonkers, N. Y.; manufacture electrical signs, etc.; \$4,500 James Chester, No. 607 Amsterdam avenue, New York; James Donnelly, James W. Slade, Yonkers, N. Y.

Elizabethtown, N. Y., Steam Railroad; \$80,000; Francis A. Smith, George W. Jenkins, Livingston Woodruff, Elizabethtown, N. Y.

Rochester Telephone Muffler Company, Rochester, N. Y.; manufacturing telephone mufflers, etc.; \$10,000; Mortimer E. De Witt, 601 Wilder building; Frederick W. Zoller, 25 State street; Arthur G. Moore, 139 Powers building, Rochester, N. Y.

Standard Gas Novelty Company, Queens; manufacture gas fixtures, electrolers, brackets, globes, etc.; \$50,000; Fred O. H. Fincke, College Point, N. Y.; George Frenz, Emil P. Frenz, Long Island City.

Buffalo Maintenance Company, Buffalo; manufacture automobiles, power wagons and motor boats; \$5,000; Harold Kaiser, 539 Linwood avenue; Joseph H.

Preston, Jr., 260 Fargo avenue, Buffalo; Charles Hoxie, 70 Lowell street, Rochester, N. Y.

The Murphy & Comstock Engineering Company, Queens; machine shop; \$3,000; E. J. Forhan, H. M. Browne, J. J. Harper, 154 Nassau street, New York.

Bradhurst Automobile Company, New York; manufacturing automobiles and motor vehicles, etc.; \$5,000; Charles E. Travis, George W. Smith, William H. Mehlich, 99 Nassau street, New York.

Weber-Knapp Company, Jamestown, N. Y.; manufacturing hardware specialties, etc.; \$50,000; Adam F. Weber, Edward L. Knapp and Anna C. Weber, Jamestown.

Paragon Metals Company, New York; smelt and refine metals; deal in scraps; \$10,000; E. J. Forhan, H. M. Browne and J. J. Harper, 154 Nassau street, New York.

International Reconstructed Typewriter Company, incorporated, Fishkill, N. Y.; manufacturing typewriting machines, etc.; \$60,000; E. J. Forhan, J. J. Harper and H. M. Browne, 154 Nassau street, New York

OHIO.

Pomeroy Belt Railway Company, Columbus; Walter H. Martin, George T. Spahr, Benjamin Monett, Herbert L. Thomas and G. B. Durant; \$150,000.

Toledo & Findlay Railway Company, Toledo; Harry J. Gibbons, B. L. Kilgour, A. B. Dunlap, Morris McGrew and Frank H. Simpson; \$10,000.

Stoddard-Walker Manufacturing Com-

pany, Cleveland; P. D. Metzgar, M. L. Stoddard, F. E. Walker, J. A. Stoddard and H. A. Walker; \$10,000.

Newark Drilling Company; Columbus; F. H. Mutchler, Sam Ken, T. C. Jeffries, James K. Mercer and John D. Freze; \$10,000.

Schettler Ripple Company, Cleveland; gas engines; C. A. Schettler, J. A. Meshner, M. C. Ripple, John M. Marty and Ben F. Marty; \$5,000.

Consumers' Light, Heat & Power Company, Springfield; Edward Wren, James B. Malone, J. D. Fitzgerald, Barton Griffith and O. P. Cockerill; \$50,000.

Belt Savings Hook Company, Cleveland; L. M. Gross, H. F. Pamenter, N. M. Carmichael, E. Levy, Garrett A. Meyer; \$1,000.

Standard Manufacturing & Distributing Company, Cincinnati; increase capital \$25,000 to \$50,000.

Republic Motor Car Company, Hamilton; amendment changing its preferred stock of \$250,000 to common stock.

Cleveland, Akron & Columbus Railway Company, Cleveland; amendment for construction of branch in Wayne township, Summit county.

Bissel Motor Company, Toledo; increase capital from \$10,000 to \$200,000.

WEST VIRGINIA.

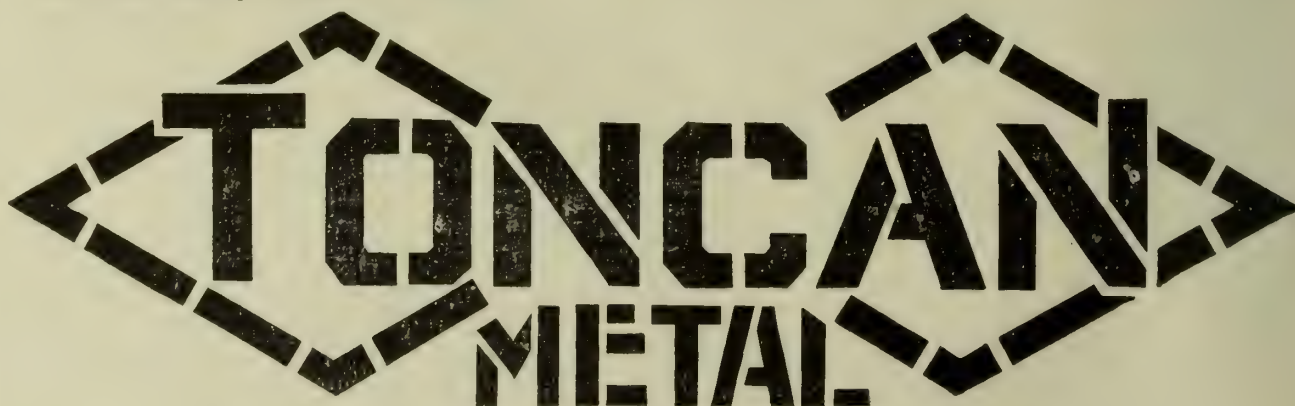
The Glen Alum Coal Company, Glen Alum, W. Va., J. R. Gilliam, president, Lynchburg, Va., will rebuild its burned coal tipple. It is in the market for a steel tipple, screens and conveyor line.

Mr. Iron or Steel Manufacturer:

Whether you operate mill, furnace or foundry

the subject of corrosion-resisting material for your roofs and other exposed Sheet Metal Work is of great importance to you. The exposure to smoke, fumes, etc., is greater than in ordinary buildings, and greater resistance to time and the elements is hence necessary for enduring work.

For this reason you should be interested in



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They cost less than Charcoal Iron—not much more than Steel.

They have high ductility and work up as well as mild steel.

Their rust-resisting, lasting qualities mean greatly added life and economy.

Particulars will interest you. Write for them at once.

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Sole Manufacturers TONCAN METAL Sheets.

CUTLER-HAMMER



THE OLD WAY (one at a time)

In every branch of the iron and steel industries the past decade has witnessed wonderful improvements in processes and machinery, all tending to expedite manufacture and to lessen the cost of production. The single exception has been in the cost of handling raw material. It is now possible to employ a labor-saving device—the lifting magnet—for this work also.

The use of a lifting magnet cuts the cost of handling pig iron, scrap and similiar material from five cents (or even eight cents) per ton to half a cent per ton. It eliminates an unreliable and oftentimes troublesome class of labor. It saves time in loading and unloading cars. It facilitates skull cracker work. It enables one man (the crane operator) to handle heavy castings without the aid of ground men to adjust slings. In short, the lifting magnet proves useful in so many ways that no plant that has once used one ever thinks of returning to the old method of handling raw material.

The Falk Company, of Milwaukee, has one of these magnets installed on a locomotive crane. Prior to installing the magnet this company unloaded its cars by hand, a gang of five men working four hours to unload a 50-ton car. The same work is now accomplished by the lifting magnet in one and a half hours. Taking the figures of their annual production and including all offsets, the Falk Company figures that the use of a lifting magnet saves them not less than \$5000 a year.

One of the earliest purchasers of a Cutler-Hammer magnet was the Carnegie Steel Co. This company now has ten Cutler-Hammer magnets in use at its various plants.

In July 1907 a Cutler-Hammer magnet was entered in a competition conducted

LIFTING MAGNETS

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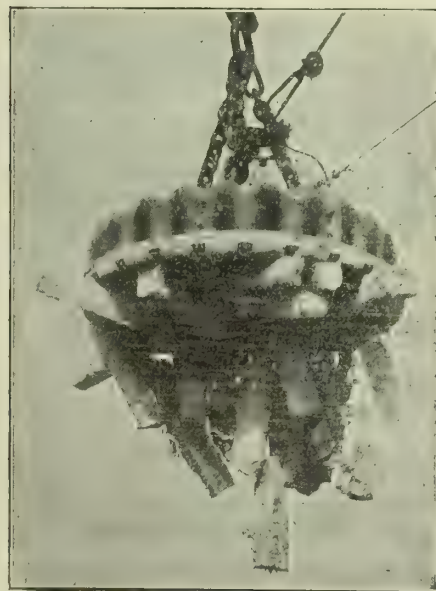
by the Youngstown (Ohio) Sheet and Tube Co., the result of the test demonstrating that the average lift of the Cutler-Hammer magnet was better by 42 per cent than that of a heavier competitive magnet. The Cutler-Hammer magnet was purchased and we have since received from the same company orders for two more magnets similar to the first.

The Jones & Laughlin Steel Co., of Pittsburgh bought their first Cutler-Hammer magnet in 1907 and tried it out alongside a magnet which prior to the advent of the Milwaukee magnet was considered to be the best in the field. The result of this company's experience with the two magnets may be gathered from the fact that it has since purchased eight more Cutler-Hammer magnets.

The Pennsylvania Steel Co., of Steelton, Pa., purchased one Cutler-Hammer

magnet and one competitive magnet in the summer of 1907 and after repeated tests of both found that the former on certain classes of material was able to lift from 30 to 40 per cent more than the latter and that on no class of material did the Milwaukee magnet fail to give more than 25 per cent greater efficiency. This company has since purchased four more Cutler-Hammer magnets.

In March 1908 the Bethlehem Steel Co., of South Bethlehem, Pa., and the Labelle Iron Works, of Steubenville, Ohio, each purchased their first Cutler-Hammer magnet and inside of six months both com-



THE NEW WAY (a ton at a time)

panies had favored us with repeat orders. Many other concerns, as well-known in the iron and steel industry as those named above, are now numbered among the users of Cutler-Hammer lifting magnets. Would it not be well to inform yourself concerning a labor-saving device that meets with such general approbation.

We have issued a 48-page booklet which fully describes and illustrates our line of lifting magnets. Our nearest office will be glad to send you one of these booklets on request, or to furnish you with any other information you may desire.

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CHICAGO: Monadnock Block. BOSTON: 176 Federal St. PITTSBURGH: Farmers' Bank Bldg.
CLEVELAND: Schofield Bldg. SAN FRANCISCO: Otis & Squires, 155 New Montgomery St.

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Foundry Foremen and Others wanted to increase their earning capacity 25 to 50 per cent, by taking a course in the mixing of irons with the Milwaukee Correspondence Schools, Goldsmith Bldg., Milwaukee, Wis.

A Position as Manager or Superintendent; age 29; a graduate Massachusetts Institute of Technology; at present in charge of a boiler plant with an annual output of nearly 100,000,000 K. W. H.; reasons for desiring a change; 12 hours per day, 365 per year. Address Box 4, Darlington, Mo.

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Situation—An experienced accountant, correspondent and general office man, accustomed to handling men and accounts, desires position where energy and attention to details will merit recognition. Address Postoffice Box 194, Northside, Pittsburgh.

Wanted—Attention, manufacturers. An old-established rolling mill, whose output is high grade bar iron, and black and galvanized sheets, and having ample ground in Pittsburgh district, would be interested in having located on their ground manufacturing adjuncts that use above materials. Parties engaged in manufacture of trade articles from above materials, who contemplate change of location, or engaging in new enterprises, can address office of the Industrial World, Pittsburgh, Pa., giving full particulars as to tonnage used; space desired, etc.

Wanted — A second-hand 15 or 16 h. p. stationary gas engine. Address Norwood Machine Company, Cincinnati, O.

Wanted — Manufacturers wanted to build cold rolled shafting machinery on royalty basis, under United States patent No. 895,364, dated August 4, 1908, described in the Industrial World December 28, 1908. Address John S. Griffin, Roslyn, Washington.

SEALED PROPOSALS.

Machines for Tabulating Agricultural Statistics. — The Director of the Census is considering various types of machines with a view to determining the one best adapted for tabulating the agricultural

statistics of the Thirteenth Census. Any one possessing a machine adapted for this purpose is invited to present the same for test in practical operation at the Bureau of the Census, Washington, D. C., on or before July 31, 1909. For further information address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

Sealed Proposals will be received at the office of the Director of the Census, Washington, D. C., until 2 o'clock p. m., August 9, 1909, and then publicly opened, for furnishing all the labor, materials, and work necessary for the construction in lots of 60, 75, 100, or 125 tabulating machines and delivering the same complete, free of all charges for transportation, at the Census Building, Washington, D. C. right is reserved to accept or reject all bids in whole or part, to strike out any item or items in the specifications, and to waive any defects. For specifications, blueprint drawings, blank proposals, and full information, address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

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haust 7 inches, diameter of piston rod 3¾ inches. Air cylinder, diameter 48 inches, stroke 42 inches, discharge pipe, 14 inches, diameter of piston rod 4 inches, diameter of crank shaft 9¼ inches. This engine has been little used and is in good order and condition. Apply to Tremont Nail Company, West Wareham, Mass.

For Sale—Steam engine. Wetherill Corliss, R. H., 22x48, 250 H. P., first-class condition, cost \$3,300, will sell for less than half price, a bargain. Keppel & Company, Chester, Pa.

For Sale — One second-hand 8x9" Chuse engine, direct connected to 15 k. w. Triumph generator; good condition. Electric Machinery & Specialty Company, 204 Franklin avenue, St. Louis, Mo.

For Sale—Rock Drill—Ingersoll make; motor, 1 h. p., complete; shafting, pulleys, hangers, belting, lathes, 1 drill press, cheap; boilers, engines, pumps. William H. Flynn Machinery Company, 404 East Second street, Cincinnati, O.

For Sale—One-fifth interest in an up-to-date manufacturing plant, building a line of special and patented machinery, and having a very extensive jobbing trade. Purchaser can secure a salaried position as engineer, chief draftsman, or salesman. Price of one-fifth interest \$10,000. Address Box 154, care Industrial World, Pittsburgh, Pa.

Machinery Bought, Sold and Repaired—Engines and boilers, all styles and sizes, both new and second-hand; machinery of every description for all purposes; also pulverizer and crushers. Write to me for anything you want. Gruendler Machine Company, 928 Main street, St. Louis, Mo.

For Sale—One 18x24" slide valve engine 2 66"x18' tubular boilers, 1 heater, 1 deep-well pump and 5 wood working machines; will overhaul and put in first-class condition, cheap; also, several direct current motors, 3, 5, 10 and 15 h. p., 220 volts. The Farrin-Korn Lumber Company, Winton Place Station, Cincinnati, O.

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SLAG ENCLOSURES IN STEEL.

London "Engineering," in its current issue reports at some length the discussion, at the recent meeting of the International Association for Testing Materials, at Copenhagen, of the paper of Walter Rosenhain, B. A., of England, on "Slag Enclosures in Steel," the object of which was to call attention to the importance of further and closer study of the influence which was exerted upon the strength and safety of steel by the presence within its mass of numerous enclosures of non-metallic bodies, which might conveniently be grouped together under the term "slag enclosures." The detection of the presence of slag enclosures in steel was comparatively easy, the most direct method being an examination of a micro-section of the material. The section should be taken longitudinally in the case of rolled or forged material. The author illustrated by diagrams the microscopic appearance of some typical forms of slag enclosures, taken from objects which had failed in service as a result of an excessive quantity of these enclosures.

The duplex appearance of some of the slag enclosures in steel was currently accounted for on the view that they consisted of sulphide of manganese embedded in silicate of manganese; but the author had observed instances of duplex enclosures in which neither constituent was really soluble in acids. A comparison of these enclosures with the slag or cinder enclosures which were so typical of wrought iron also furnished interesting facts. In wrought iron, while practically no manganese was present, there was always a large amount of non-metallic matter, and this sometimes presented a very well-marked duplex structure. A diagram showed slag enclosures in Staffordshire wrought iron. In this case, although sulphide of iron might be present, it seemed probable that the constituents were two different silicates—or possibly oxides—of iron. A further study of these impurities was obviously required; our present knowledge of their nature depended principally upon chemical analyses of residues obtained after selective solution of the metal, and the uncertainty of results obtained in that way was well known.

Mr. Stead had suggested that the enclosures in the case of steel resulted from the introduction of oxygen into the steel either during the melting or the teeming process, this oxygen reacting with the manganese and silicon to form the manganese silicates, while the sulphur already in the steel combined with the manganese in the manner shown by Professor Arnold and others. This was a perfectly probable explanation, and so far as the sulphide of manganese was

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concerned, there was little need to look further. The only remedy for this class of enclosures was to keep the molten metal at rest for a sufficient time, after the addition of manganese, to allow the sulphide to rise to the surface; and in spite of the very considerable difference of density, this probably required a much longer time than would be at first sight anticipated.

The entire protection of the steel from oxygen during the teeming operation was the obvious remedy for the formation of silicates in the view of Mr. Stead, although this remedy appeared difficult to apply in practice. The author pointed out that steel was also liable to contamination with impurities of a silicious nature from other causes. One of these was possibly the incomplete separation of slag from metal in the furnace or the converter; the violent boiling of the steel must involve a good deal of intermixing of slag and metal, and here again the time required for complete separation was probably longer than was supposed, particularly where the smaller particles of slag were concerned. In the course of its passage from the furnace into the ingot-moulds the steel also ran several risks of contamination with silicious matter by contact with the tapping-hole, the gutter, the ladle lining, and the stopper. The frequency with which non-metallic impurities occurred in ordinary steel could no longer be regarded as surprising. The further and exact study of their nature and mode of origin therefore appeared most desirable.

There was a considerable and vital difference between the behavior of slag in wrought iron and in steel. In the former material (iron) the metal itself was soft and ductile, and much less sensitive to local mechanical injury than the stronger, but in some ways more sensitive, steel. In steel the non-metallic impurities generally tended to segregate in regions or bands of ferrite; but where these impurities were embedded in the harder pearlite they were in contact with a material which could not readily adapt itself to an essentially incompatible neighbor.

Mr. Guillet, the French delegate, found that this question of slag enclosure was one of utmost importance. The slag enclosures had an influence on the mechanical properties of the metal. He gave the example of a contract for ship-plates passed between a foreign buyer and a French works. The plates stood the specified tensile test of 42 kilogrammes per square millimetre (26.6 tons per square inch) and 20 per cent elongation; were accepted on this test, and delivered by the works. But on their being worked up at destination, numerous cracks were developed. Impact tests with notched bars as taken from the plates, and also

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subsequently treated, gave invariably bad results. Slag enclosures were found in the plates, and the latter would have been rejected at the manufacturers' works had impact tests been carried out before delivery. Slag enclosures caused the metal to crack, and the cracks started from the enclosures. He recommended that further work be carried out on the subject.

Mr. Stead, who followed, confirmed the statements under his name given in the paper. He had suggested to cast all steel, if possible, without allowing the air to impinge upon it. It was barbarous to cast through the air after the very extreme care which was given to the process of manufacture proper. The action of the oxygen in the air led to the formation of the particles; some of these escaped, but others remained in the steel. He thought it was premature to conclude that fracture continued from the slag into the neighboring metal.

Mr. Segre, of the Italian State Railways, Rome, mentioned the corrosion of locomotive boiler plates caused by slag enclosures in the metal, and promised to send to the committee his studies on the subject. He also made a passing allusion to the fact that in the Italian railways they used the Brinell test methods extensively, carrying the apparatus over long distances to test the hardness of the rails in service on the various tracks.

The Congress took note of Mr. Rosenhain's report on this question; they recommended further investigations into the matter, and the appointing of a committee for the purpose of ascertaining the influence of slag enclosures upon the quality of metals.

NEW PATENTS.

Among recent patents reported for the Industrial World by Siggers & Siggers, Washington, D. C., are the following:

933,981—Patrick J. Havey, of Swissvale, Pa., improved metal working machine. The invention includes improvements in apparatus for upsetting a portion of the end of a pipe, spreading upset portion to a plane at right angles or approximately at right angles with the axis of the pipe, thereby forming a flange and then facing such flange portion. The tool comprises a chuck provided with rollers, in combination with means for rotating the chuck, means for moving the chuck in the direction of the length of the pipe and thereby effecting an upsetting of the wall of the pipe adjacent to its ends, and bending the previously thickened portion outwardly.

934,235—Process for cutting metal objects patented by Albert Teschemacher and Angelo Sturmo, Eller, near Dusseldorf, Germany. The main purpose of



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the described process is to obtain perfectly smooth cuts such as are obtained by a saw, and to prevent the fusion of the metal, which occurs in other known processes.

The process consists in projecting onto the piece to be cut along the cutting line a heating flame formed of a mixture of a burning gas with oxygen, then blowing upon the heated part a jet of oxygen followed immediately by a jet of non-oxidizing gas.

934,079—Gompei Kuwada, of Kobe, Japan, machine for planing curved slots in the periphery of a circular work piece, such as a steam turbine bucket. The above described machine comprises a rotatable head having an eccentric bore, a sleeve mounted therein, a rotary tool-holder eccentrically mounted in the head, driving means, gear connections, including a friction clutch, and stops to limit the rotary movement.

933,324—Edward S. Mowry, of Middletown, Conn., process of metal-coating small metal articles. The invention is designed to provide an economical, simple and quick process for applying metal, such as zinc, to galvanize small articles. In the process a mass of small metal articles, combined with the requisite quantity of coating material and flux, are placed in a receptacle, and the heat applied to the mass.

933,575—Machines for manufacturing metallic receptacles, Franz Olejnik, of Rankin, Pa. The invention includes a single forging machine, comprising an anvil, with wedges for securing the anvil body within a socket; an adjustable rod, all provided with revolvable bearings.

933,596—Guy James Stock, of Darlington, England. Processes for the manufacture of steel, in which the material to be reduced to steel, instead of being melted in a cupola or other melting furnace and charged into the converter vessel in a molten state, is melted in the converter vessel itself, into which it is charged in the form of pig iron, scrap of the like materials in the same condition as it would be charged into a cupola.

The process consists, in the production of steel by means of a Bessemer or pneumatic converter arranged in connection with an economizer, the process of melting the iron and passing the products of combustion through the economizer, then moving the converter and converting the iron therein into steel, allowing the products of combustion to go to waste, and heating the air supply for each operation by the economizer.

934,519—Berthold Goldsmith, of Lis-

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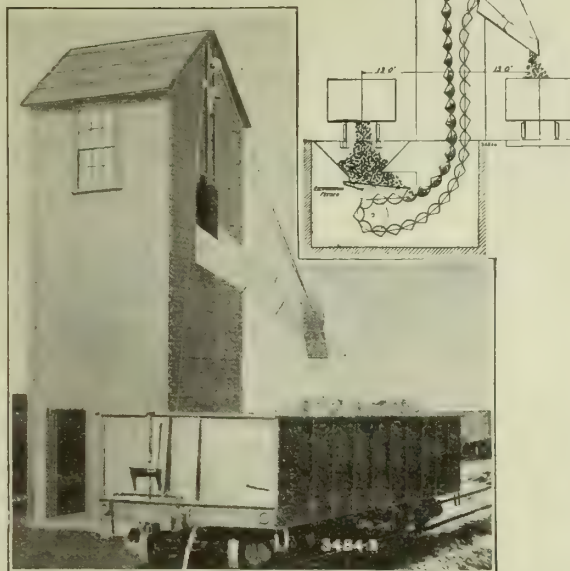
bon, Ohio, apparatus for coating sheet metal, whereby roll, sheet or plate metal can be rapidly and thoroughly coated with a substantially uniform layer of the coating metal or alloy, and whereby the coating metal is prevented from getting onto the edges and the upper surface of the roll, sheet or plate metal and waste is eliminated. The apparatus comprises a pot or tank for the coating material, a rotary paddle wheel therein, means for drawing the sheet or plate over the tank and paddle wheel, and guides arranged at the sides of the tank to receive the edges of the sheet or plate.

934.636—Improved lathe. Adam Tindel, of Philadelphia, Pa., assigned to Tindel-Morris Company, of Eddystone, Pa., a corporation of Pennsylvania. The lathe is designed to improve the means for holding the work and presenting it to the reducing tool, in holding truly in an axis of revolution the several parts of a crank shaft and moving it through the angles required for keeping it in contact with a grinding wheel subject to gradual reduction in diameter from wear.

934.837—Metal planing machine. Albert M. Powell, Worcester, Mass. The prime object is to increase the efficiency and speed capacity in machines of this class, and to attain a mode of operation in metal-planing machine whereby the commencement of the cut is effected at a moderate rate of cutting speed or platen-movement, and then when the tool is fairly in the work an automatic acceleration of the cutting speed or platen-movement is effected. The machine has an accelerating mechanism, and means for automatically putting the accelerating mechanism into action after the platen has moved a predetermined distance with the tool in cutting action.

The following recent patents are reported expressly for the Industrial World, by J. M. Nesbit, Park building, Pittsburgh:

Checker-brick for hot-blast stoves, David Lamond, Pittsburgh; gas-producer, H. I. Lea, Pittsburgh, assignor to the Westinghouse Machine Company; steam-turbine, Wade Barre, Cleveland, Ohio; apparatus for coating sheet metal, Berthold Goldsmith, Lisbon, Ohio; crank-case for engines, J. P. Langraf, Mishawka, Ind.; punching-machine, W. B. Kilgore, Crafton, Pa.; gas-purifying apparatus, H. I. Lea, Pittsburgh, assignor to the Westinghouse Machine Company; superheater, H. W. Jacobs, Topeka, Kan.; process of electrically welding metals, C. R. Sturdevant, Worcester, Mass., assignor to American Steel & Wire Company, same place; ladle construction, R. H. Stevens, Munhall, Pa.; slag-handling table, D. T. Croxton, Cleveland, Ohio; process for



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reducing the amount of carbon in cast-iron or articles cast from iron, Walter Rubel, Vienna, Austria-Hungary; annealing box and furnace, H. C. Shaw, Glen-shaw, Pa.; elastic-fluid turbine, George Westinghouse, Pittsburgh, assignor to the Westinghouse Machine Company; turbine, Vecktor Peterson, Arlington, N. J.; rotary engine, George Westinghouse, Pittsburgh; electrical welding-machine, W. C. Winfield, Warren, Ohio; apparatus for rolling tin plates, C. W. Bray, Pittsburgh, assignor to American Sheet & Tin Plate Company; fluid-pressure turbine, George Westinghouse, Pittsburgh, assignor to the Westinghouse Machine Company; welding and brazing tool, R. E. Bruckner, Mount Vernon, N. Y., assignor to Commercial Acetylene Company, same place; method and apparatus for cleansing articles of refuse tinware and for the recovery of solder therefrom, J. W. Evans, Cargo Fleet, Middlesbrough, England; wire-drawing machine, H. L. Thompson, Waterbury, Conn.; elastic-fluid turbine, George Westinghouse, Pittsburgh, assignor to the Westinghouse Machine Company.

TAFT ON WESTERN WATER POWER.

Outlining the government's policy regarding the conservation of the nation's natural resources in an address of 45 minutes' duration in Spokane, and referring particularly to the growth of electric central steam power plants in the West. President Taft on September 28, talked at length upon the disposition of water power sites on public lands. Regarding the disposition of water power sites he said in part:

"When the government became possessed of its public domain and took measures to secure its settlement by the passage of the homestead act and other acts offering, after certain steps prescribed, to vest title to a specific part of the public lands in individuals the chief object of congress seemed to be to secure development by inducing people to settle on public land and acquire it for themselves.

"The thought of conserving the resources which were thus opened to private acquisition hardly occurred to congress.

"Its generosity to the Pacific railroads in offering the public lands in such extensive grants to them is an instance of the spirit which actuated congress 40 and 50 years ago.

"The development of electrical appliances and the transfer of power through electric lines for long distances has made the use of water power to produce electricity one of the most important sources of power we have in this country, and will so affect the cost of production in all the fields of manufac-

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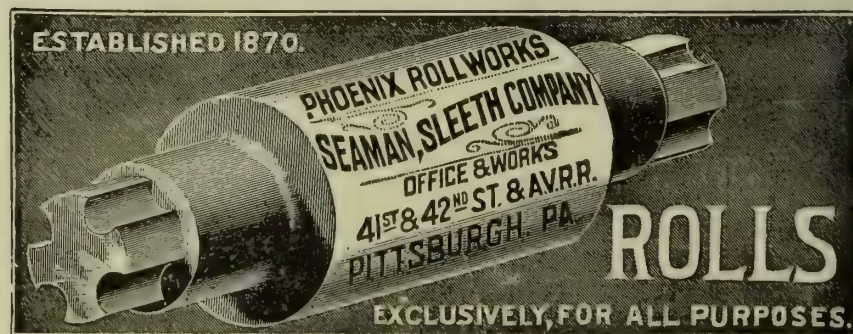
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ture and production of the necessities of life as to require the government to retain control over the use by private capital of such power when it can only be exercised upon sites which belong to the government.

"Such sites can be properly parted with under conditions of tenure and compensation, consistent on the one hand with reasonable profit to the private capital invested, and on the other with the right of the public to secure the furnishing of such power at reasonable rates to every one.

"There should be a condition of forfeiture if the owner of the power site does not, within a certain time expend capital sufficient to develop the power, and after development shall not charge rates to the public beyond what is a reasonable profit on the capital invested in the improvement to be regulated by the government.

"The amount of compensation that ought to be charged by the government for the use of the water power sites might perhaps be left to readjustment every 10 to 15, or 20 years.

"This is a matter which congress must take up. The water power sites are now generally disposed of under the same kind of a procedure as that by which agricultural lands are taken up, and there is no power on the part of the secretary of the interior in the disposition of such sites to impose the conditions suggested.

"This matter has become so important that under the last administration large tracts of land amounting to upward of 4,000,000 acres were temporarily withdrawn from settlement in order to prevent the acquisition of water power sites under the general land laws.

"This amount has been reduced under the present administration to 450,000 acres, which include even more ascertained water sites than the original withdrawals.

"I shall, therefore, urge upon congress, at its next session, the passage of a law authorizing the disposition of such water power sites upon terms to be agreed upon by the secretary of the interior with the proposed purchaser of the character already indicated.

"It may turn out that restrictions of this sort are so burdensome as to discourage the investment of capital, and it may be necessary to modify the requirements on this account.

"But my own impression is that the demand for water power is going to be so great that these restrictions will not prevent the investment of capital, but will ultimately bring to the public coffers a revenue from an entirely proper source and will secure the development of a power for manufacturing industries that will probably in time exceed the



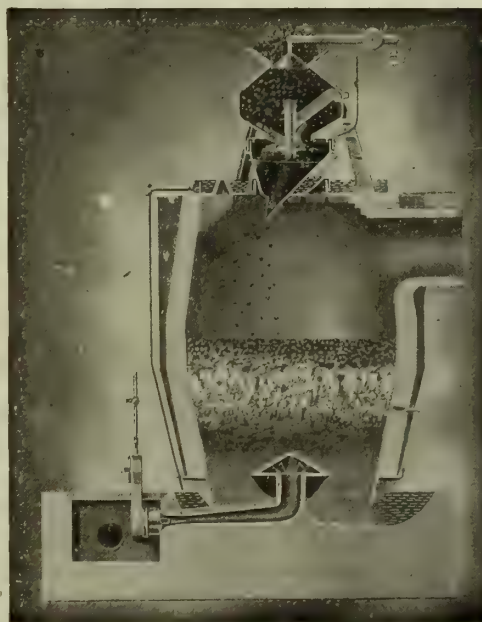
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utility and value of coal, and become a substitute for it."

KNOX'S CHINESE BARGAIN.

Secretary of State Opened Up Huge Equipment Market.

Press dispatches from Washington comment on the fact that when Secretary of State Knox secured an agreement that the United States should share equally with Germany, France and Great Britain in the loan for the construction of the new Chinese railroad he not only found a good investment for American capital and conserved the interests of this country in the future development of the Flowery Kingdom, but he also made a market for millions of dollars' worth of American railway equipment and accessories, for it is understood that American engineers shall be appointed upon the board that will select the equipment and thus protect American interests and give preference to the manufacturers of this country.

It is proposed to build about 1,100 miles of railroad, for which the initial loan is to be \$30,000,000. Of this sum American bankers are to get one-fourth, or \$7,500,000.

The original loan of \$30,000,000 is not to cover the cost of equipment, as this is the sum that is roughly estimated to be necessary to build the line. Other loans will be made to buy locomotives, cars, signal apparatus and other things needed, and these items will run up into the millions of dollars. Already manufacturers are making inquiries at the State Department.

The department officials have no detailed information at present, but it is believed that when work is once begun and with American engineers directing it the manufacturers of this country will find a good market for their wares. In addition to rails much excavating machinery, bridge material, picks, shovels and other tools of that kind will be in demand. Already American equipment experts are on the ground studying the needs of the situation.

CHINESE ORE HOLDINGS.

Steel Corporation Denies Report of Prospecting in Orient.

The following press dispatch from Washington was sent out recently:

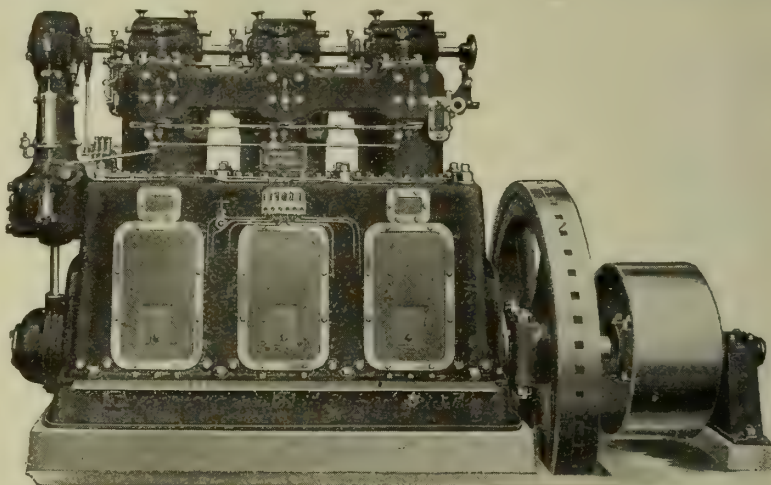
The United States Steel Corporation is getting ready to make a strong bid for control of the coal, iron and steel business of China.

Travelers who have recently returned from that part of the world, together with some data which consular agents have presented, have made it apparent that the great American corporation is much farther along the road of control of a vast business in the Orient than is generally known.

Only rather vague information has

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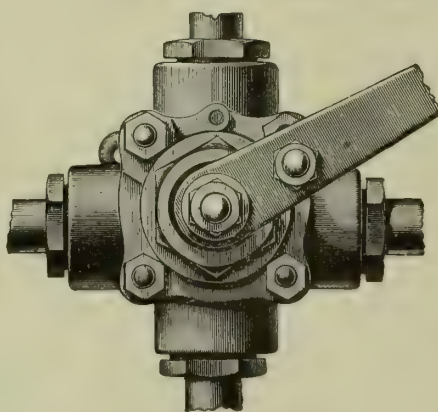


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been obtainable as to the holdings of iron and coal which have been gathered up for the Steel Corporation in China, but it is very positively declared that vast deposits in the province of Shan-Si, believed by many people to be the richest in the world, have come into the control of the corporation.

A day afterward, the New York "Tribune" printed the following statement:

"Ex-Judge E. H. Gary, chairman of the United States Steel Corporation, requested that statements that the Steel Corporation was seeking to enter the steel business in China be denied. He said that such statements were 'utterly without the slightest foundation in fact.'"

New York papers also printed the following inspired interview:

Regarding a dispatch from Washington to the effect that the United States Steel Corporation had secured vast holdings of coal and iron ore in China, a financier in close touch with the affairs of the company said:

"The United States Steel Corporation has been experimenting and investigating conditions bearing upon steel manufacturing in China, as well as other foreign countries, for several years. I do not believe any big deals so far, as acquiring iron ore in and coal holdings in China, have been consummated as yet. The Far East, in time, is likely to become a great base for steel. Compared with consumption in other countries, the Far East can hardly be regarded as a customer of consequence at the present time."

STEEL RAILWAY TIES.

Europe Substituting Metal for Wood.

Consul H. Albert Johnson, of Liege, states in a report to the Bureau of Manufactures that in many of the leading industrial countries of Europe the steel railway tie is largely being substituted for that of wood. The consul says further:

When these ties are carefully constructed in order to meet the demands of the modern railway traffic, they are in general favored on account of their superior solidity and power of resistance. Nevertheless, their high price, certain defects in form, and the absence so far of a convenient and simple mode of attachment have prevented in a great measure their general adoption, although they are being more extensively utilized.

It is asserted that the English manufacturers have on the market a tie "profile en rigole" (grooved section) that sells for \$30 per ton, or less than the present cost of wooden ties. It is evident, therefore, that under these conditions the use of the steel tie would produce decided economical results for the railways.

A good steel tie of moderate price is



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urgently needed by the railways of Europe, and the prospect of supplying such a demand might be worth the consideration of American steel works. The adoption of metal ties is especially necessary in certain localities to prevent the rapid destruction of forests. It is estimated that in Europe a mile of railway line requires about 2,500,000 cross-ties every 12 years, which means the cutting of an enormous quantity of forest trees. It is also estimated that the railways consume something like 40,000,000 ties per annum, and this consumption is said to be increasing at the rate of 3,000,000 a year.

ARMS FACTORIES ABROAD.

Americans Capture Australian Contract.

A London cablegram says: American competition on big contracts is a constant source of worry to British manufacturers and contractors. The Australian government recently accepted the tender of an American firm for the construction of a small arms factory in New South Wales. The price was \$340,000, and so the contract was worth getting.

The reasons the British firms failed to secure it are given by J. Cook, the Australian minister for defense, who says: "We should much prefer to have given the contract to a British firm, but even at preferable rates, the decision had to be in favor of Messrs. Pratt & Whitney, the American firm. The expert who was sent abroad to go into the whole matter was emphatic in his recommendation of the American machinery. In his report he said that many of the machines turned out by Pratt & Whitney's factory would accomplish double the work of those he saw in Great Britain. As a matter of fact, two of the British tenderers would have obtained their tools from this American firm. In addition to all this the Americans will construct the factory within 12 months, while the time insisted upon by the British firms was from two to three and a half years.

Armament Factory for Siam.

Says the Birmingham (Eng.) daily "Post," concerning the establishment of an armament plant in Siam:

Some time since reference was made to the anxiety of the king of Siam to establish armament factories in his country after the European plan. I am now given to understand that this desire has assumed definite shape. It is probable that the king will follow his own example in connection with his reorganized finance and woods and forests departments, and apply to the government of India for the loan of a responsible official in order to initiate his scheme. Where possible, native ingenuity and labor will be requisitioned, but it is also



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certain that this Anglo-Indian official will desire to have British associates. At all events, the scheme is apparently to be carried into effect, and it may be assumed that it will be under British auspices.

SHEFFIELD'S GREAT TUNNEL.

Cable reports from Sheffield, Eng., say that the Sheffield Corporation has just completed the piercing of a water tunnel 7,623 yards long, which is to convey its share of the supply from the works of the Derwent Valley Water Board to the Rivelin Valley, whence it will be distributed to the city. The driving of the tunnel, which has been in progress from both ends simultaneously, was begun on July 24, 1904.

The size is 6 feet by 6 inches, and the average number of yards pierced per week on each side has been from 18 to 20. The tunnel has been made without shafts, the ventilation having been effected by exhausting air through a 20-inch pipe by means of fans placed at the mouth.

The result has been that the air at the face of the tunnel has been kept almost as clean and pure as at the inlets. The haulage of material has been done by 25-horsepower electric locomotives, driven on the overhead wire system. The tunnel is lighted throughout with electricity.

The drilling has been done by ordinary compressed air drills of the Larmouth type, the air compressors being driven by electric motors placed at a distance not exceeding about 400 yards from the working face. About nine to 12 months' work yet remains to be done before the tunnel is actually completed, as the invert has to be put in, as well as a considerable length of concrete and brick-work lining. The total amount expended on the tunnel up to the present is about £136,000, and it is estimated that the final cost will be £150,000. Not a single serious accident has occurred during the progress of the work.

A HALT ON SMOKE.

Harrisburg, Pa., Plans Plant to Run Without Coal.

Gas engines, doing away with the smoke nuisance as well as the unsightliness of smoke stacks, cold storage pipes and other incidentals to a steam pumping plant, will be used in the new auxiliary pumping plant in Reservoir park, Harrisburg, Pa., according to plans submitted last week by the Water Commissioners of that city. The new plant is estimated to cost \$55,000.

The board's recommendations provide for a pumping station to contain at this time two gas driven pumping engines,

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each of 1,000,000 gallons daily capacity, and provisions for an additional 2,000,000 gallon engine and pump when needed; also for a covered concrete reservoir which will be approximately 1,800 feet distant and 106 feet higher than the level of the present basin when full.

Indian Manganese Ore.

Vice-Consul Charles B. Perry, of Calcutta, reports to the Bureau of Manufactures at Washington, that while manganese is one of the advancing industries

of India, the trade has received a setback, the quantity exported falling from 42,570 tons in the fiscal year 1907-8 to 24,968 tons in 1908-9, while the value declined from \$254,329 to \$156,763. These results are believed to be due to a revival of the Russian manganese industry, which had received a severe check owing to the troubles in that country. The exports of the United Kingdom in 1908-9 were less than one-half those of the preceding year, those to Holland ceased altogether, while those to France de-

creased considerably; those to Belgium, however, increased. The United States took only a small quantity of the ore, but even then it was an increase on that taken in 1907-8.

Niles Car Company to Enlarge.

The Niles (O.) Car Manufacturing Company has purchased additional property adjoining its plant. The intention of the firm is to use the land for additions.



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1902	319,000	1.85%
1903	463,000	2.08%
1904	473,000	1.78%
1905	1,735,000	4.92%
1906	2,076,000	4.55%
1907	2,129,000	4.36%
1908	4,535,000	8.89%
1909	*6,000,000	

*Estimated.

Additional capacity now under construction will give us an output of 8,000,000 barrels for 1910.

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A NEW METHOD OF LOADING COAL IN ENGLAND.

The Northeastern Railway Company, of England, has recently been experimenting at one of its Hull docks with a belt-conveyor. The system of working is to tip the wagons into a hopper, constructed in the ground and above the belt, from which the belt conveys the coal to the ship's hatchway. By means of this appliance it is claimed the coal is loaded smoothly, regularly, and with less breakage than by other coaling appliance. It has been shown possible to load coal at the rate of 700 tons per hour by this method. The advantages over the existing methods of shipping coal by hoists, etc., are so marked that the Northeastern Railway Company has given orders for the erection of belt appliances at its principal docks.

The application of the belt to discharging purposes is found in a new collier built for a Newcastle company. This vessel has for its distinctive feature a special self-discharging belt arrangement, by means of which the whole cargo can be run out of the ship in the course of a few hours. The advantages of the vessel has already appealed to a German firm of coal importers, which have chartered the steamer, and will run it between the Tyne and Hamburg, where it will have every opportunity of demonstrating its capacity to discharge swiftly and economically. The vessel is constructed to carry about 3,000 tons, dead weight, on 17 feet 11 inches draft of water, and to steam $9\frac{1}{2}$ knots per hour on a daily consumption of 20 tons of coal. The cargo will be run out through the broad, flat-belt process in six hours, or at the rate of 500 tons per hour, the machinery being worked by an electric motor. In the Tyne-Hamburg trade, under ordinary circumstances, the vessel will easily make five voyages per month; and, manual labor being unnecessary, except a couple of men in the hold to prevent big pieces of coal jamming, which is not likely to happen, the charterer, on discharging expenses alone, will save about 13 to 14 cents per ton. Besides, water ballast will not be needed for shifting; for as soon as it is fully discharged the vessel will sit on the water as if half loaded and proceed to sea immediately.

Marconi to Build Plant.

Guglielmo Marconi, the wireless telegraph inventor arrived in Glace Bay, N. S., where he is directing the reconstruction of the long distance high-powered wireless station at that place. He says the plant will consist of the latest and most powerful instruments devised, and that he hopes to establish a fine service of wireless communication by January 1.

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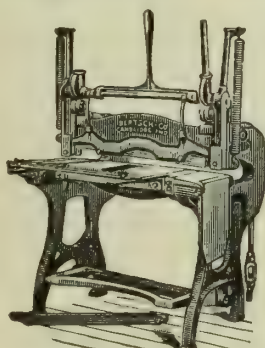
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NEW STEEL RAILS

These rails are in stock at our Pittsburgh yards, and can be shipped immediately; also second-hand rails in stock cut any length needed for building and contract work.

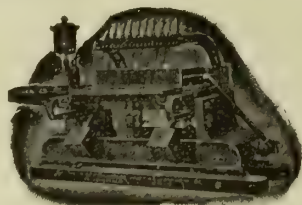
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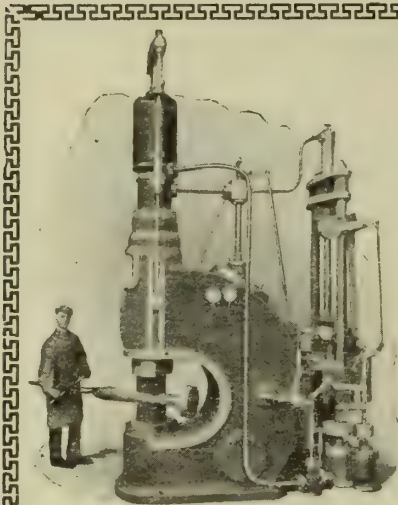
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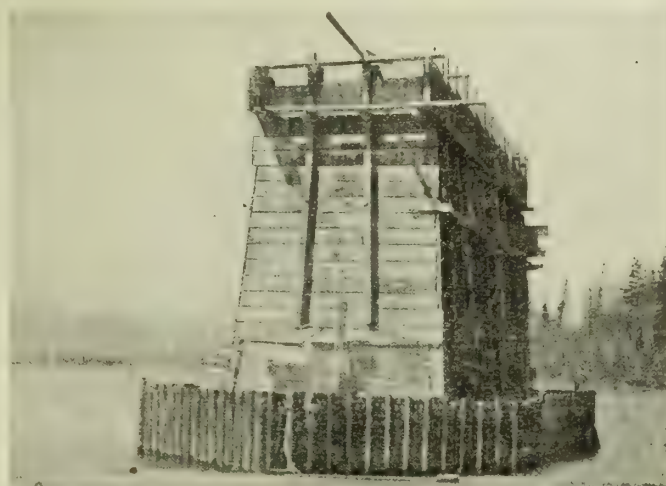
Zug Iron & Steel Co.xvii

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The photograph shows 12-inch 40-pound United States Steel Piling used for cofferdam construction on the St. Louis River, Minnesota, by the Interstate Transfer Railway Company, in 26 feet of clear water. The watertightness of the job, due to the use of fir packing strips, was a revelation to the engineers and demonstrated the advantage of this section for complete watertightness.



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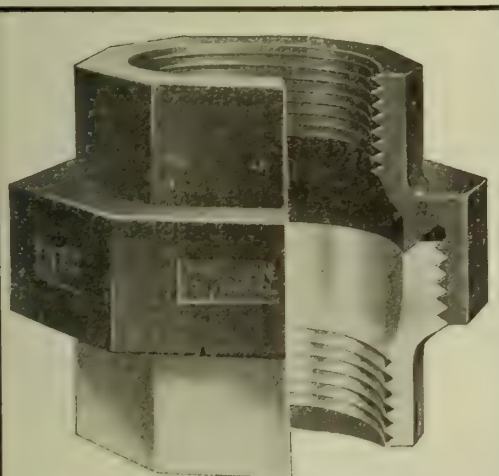
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Mesta Machine Co.Pittsburgh.
Morse Chain Co.Ithaca, N. Y.**TREADLE OPERATED CONTROLLERS.**Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.**TROLLEY POLES.**

National Tube Co.Pittsburgh, Pa.

TRUCKS.Phillips Mine & Mill Supply Co.
.....Pittsburgh.**TUBES.**

National Tube Co.Pittsburgh, Pa.

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UNIONS ("Kewanee" and Flange.)

National Tube Co.Pittsburgh, Pa.

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Morgan Con. Co.Worcester, Mass.
National Tube Co.Pittsburgh, Pa.
Taylor-Wilson Mfg. Co.Pittsburgh**WATER & GAS PIPES.**Central Tube CompanyPittsburgh.
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WHEELS.Phillips Mine & Mill Supply Co.
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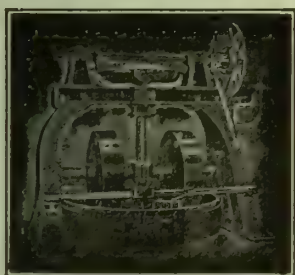
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PITTSBURGH, PA.

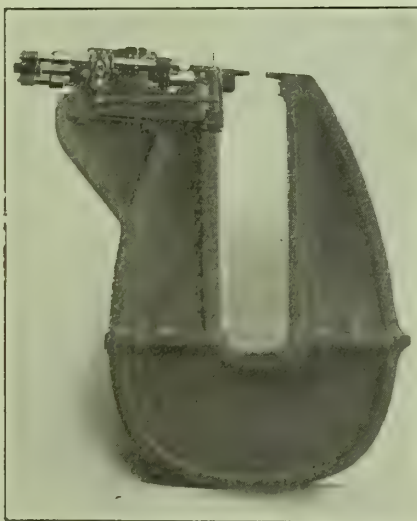


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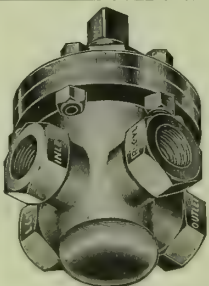
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INDUSTRIAL WORLD

Published Weekly in the Interest of Iron, Steel, Coke and Allied Industries.

43d Year. No. 42.

PITTSBURGH, PA.

MONDAY, OCTOBER 18, 1909.

Merit is the Backbone of Business

Advertising is the light which reveals merit. It used to be in olden times that many generations were required to create a business of any magnitude. Father, son and grandson all toiled toward a common end. Corporations as known to-day were unknown, and individuals worked in their own shops and small plants supplying the wants of their immediate neighborhood.

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INDUSTRIAL WORLD

FORTY-THIRD YEAR.

PITTSBURGH, PA., OCT. 18, 1909.

NUMBER FORTY-TWO.

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Summary of General Iron and Steel Markets

BESSEMER IRON AT NINETEEN-DOLLAR MARK FOR PROMPT DELIVERY—SENSATIONAL IRON MARKET IN THE EAST IS REPORTED. RAILROAD BUYING INCREASES PROSPECTIVE WINTER TONNAGE IN STEEL MILLS—FINISHED PRODUCT PRICES FIRM AT RECENTLY ADVANCED FIGURES.

TOTAL sales of 32,000 tons of Bessemer at the new price of \$19, Valleys, at the end of the week, in Pittsburgh, gave an index to the pig iron situation. As a result of the practically sold-up condition of the market for Bessemer, there are predictions that the \$20 price for immediate delivery will be reached by November 1. A month ago this seemed improbable; but after the sale of 20,000 tons to the Republic Iron & Steel Company by the Bessemer Pig Iron Association last week, it became known that the Bessemer Association was substantially sold up on Bessemer iron until April 1.

The new price of \$19, Valleys, was obtained on the Republic sale, for shipment during the first quarter of 1910, and then came two smaller sales, one of 7,000 tons and one of 5,000 tons, to Pittsburgh interests for delivery during the current quarter, at \$19, establishing the price for prompt Bessemer. There is little chance of any considerable tonnage of Bessemer being obtained the coming week at the \$19 price, though conditions by no means portend a runaway market. Steel companies are fairly

well supplied for present needs, though it is predicted several large concerns will find themselves short before the close of the year.

There were sensational moves in basic iron in the East, due to an extraordinary demand and a continued scarcity during the week. One Western steel making concern is reported to have closed for 20,000 tons of basic at Buffalo, for shipment by water. New England and New York concerns came into the market for large tonnages, and 40,000 tons changed hands at New York and Philadelphia. A pipe making mill on the Delaware river is importing a cargo of low grade Middlebrough iron, and a New England concern also has a cargo of English iron en route. It is reported that German billets are to be imported, though the reports of this move are vague. Virginia furnaces are holding future deliveries too high to make them available in the Philadelphia market at ruling prices, and several Birmingham makers are said to have withdrawn from the market at the \$15 price for next year's deliveries.

Plate and shape mills are getting in a bad way through inability to keep up with

orders. The American Bridge Company is said to have 400,000 tons of orders for fabricated materials on its books, yet is unable to operate its Ambridge or Pencoyd plants double turn on account of the delays in securing material. The American Bridge took 3,000 tons of basic in the open market at Philadelphia during the week, for its Pencoyd works, showing the shortage of Steel Corporation iron.

Railroad buying during the week brought orders for 3,000 to 4,000 more cars to the car companies, and press reports detail many preparations by the trunk lines to increase their outputs of new cars at their own shops. Meantime the car shortage has reached the critical stage. Rail orders received by the Steel Corporation during the week reached a total of nearly 100,000 tons, exclusive of the Tennessee Coal & Iron's business of 30,000 tons. Of these Steel Corporation orders, 53,000 tons go to the Carnegie rail mills, and 42,000 to the Illinois Steel. The Gary mills now have more open hearth rail orders ahead than they can turn out by February 1.

An additional stack at the Gary plant will be put in blast within a fortnight, making five in all. The last of the Carrie stacks of the Carnegie Steel Company, in Pittsburgh, was put in blast during the week, making 57 out of the 59 furnaces of the Carnegie Company in blast, the highest percentage it has ever had in operation at one time. Only one idle stack, combine or independent, now remains in what is commonly termed the Pittsburgh district, and it has not been in use in years.

The coke market was quieter during the week, production having increased, while there seemed to be an inclination that the coke operators could not maintain the \$3 price for 1910 coke without some deviation. Prompt coke was easier to obtain, notwithstanding the threatened car shortage, which has not as yet affected the coke regions appreciably.

Prices on charcoal iron have advanced 50 cents a ton during the week. Finished materials were firm at the recently advanced quotations though there seemed to be no disposition to force further advances, except that plate and bar mills showed an increasing reluctance to take on more future business except at advanced premiums. Several of the cut nail manufacturers made slight advances, but the movement was not general.

Railroads Bunch Orders for Steel Cars; Large Winter Tonnage of Plates Assured

DRAIN OF ORDERS FOR MATERIAL BEGINS TO TELL ON STEEL MILLS—FURNACES IN BLAST—NEWS OF PITTSBURGH DISTRICT.

The railroads bunched orders on the car companies last week aggregating over 3,000 cars, and the drain of orders for plates has begun to tell on the steel mills. The Carnegie, Jones & Laughlin and La Belle mills are all being called on to supply plates for car plants about Pittsburgh as a result of the rush. The orders announced last week include the following:

Pressed Steel Car Company—1,000 gondolas for Great Northern (to be turned out at the Hegewisch shops); 600 low side gondolas for the New York Central.

Standard Car Company—150 refrigerator cars and 750 50-ton gondolas, for Lehigh Valley.

Cambria Steel Company—250 50-ton gondolas for Lehigh Valley.

American Car & Foundry Company—50 flat cars, Texas Southwestern; 50 stock cars for Atlanta, Birmingham & Atlantic.

These orders are in addition to the 4,000 hopper bottom cars now being rushed out by the Standard and Pressed Steel Car companies, from their plants in Pittsburgh district. The Long Island and the Seaboard Air Line also are in the market for additional rolling stock. The Pennsylvania has increased its order with the Pullman Company by 96 passenger cars. The Seaboard Air Line also has ordered 20 additional locomotives. The Monongahela Railroad has placed an order for eight locomotives, and the Standard Car Company for one locomotive. The Louisville & Nashville is building 1,100 new freight cars at its shops in Decatur, Ala.

The Youngstown Car Manufacturing Company will make 206 steel dump cars for a Chicago cereal manufacturer; 20 steel asphalt dump cars for export to South America and a complete installation of cars, tracks, etc., for an industrial concern in New York.

The Carnegie Steel Company is to furnish 5,300 tons of structural steel for the Michigan Central terminal at Detroit, the remainder of 7,800 tons being for Bethlehem shapes. This is for the contract awarded the McClintic-Marshall Construction Company last week.

Every Furnace in Blast.

The blowing in last week, of the Carrie No. 7, by the Carnegie Com-

pany, makes a total of 62 furnaces in blast in what is commonly known as Pittsburgh district. This is practically the entire capacity of both combine and independents in this district, the only furnace remaining out of blast being an idle stack which has not been in use for years.

In Eastern Pennsylvania two additional furnaces are to go in blast early in November, both having been out for re-lining and repairs. They are the Coleman, at Lebanon, and the Marshall, at Newport.

BIG GAS ENGINE ORDERS.

Heavy Machines for Carnegie Plants at Duquesne and Youngstown.

The last casting of the order given by the United States Steel Corporation to the Snow Steam Pump Works, Buffalo, for 24 gas engine frames of 115 tons each, has been made and the Snow works is now engaged in machining and finishing the castings. This piece of business belongs among the world records for size and weight of iron castings. The engines were built for installation at the Duquesne and Youngstown plants of the Carnegie Steel Company, and the South Chicago plant of the Illinois Steel Company.

All the engines are twin-tandem, double acting of 3,600 horsepower each. Six are being equipped for power service and six fitted with blowing apparatus. The blowing engines weigh about 2,000,000 pounds, but the engines built for power service weigh 300,000 pounds less, the former weighing about 555 pounds per horsepower and the latter 472.

The fly-wheels weigh 180,000 pounds each, and had to be made in eight segments. Cylinders are 43 inches in diameter and 60 inches stroke and are made of cast steel. Each half of the cylinder weighs 29,000 pounds. The cranks, two on each shaft, weigh 25,900 pounds, each crank shaft, 100,000 pounds, and the main cross-heads 10,600 pounds. In connection with this unusual order it is of interest to note that the gas engine frames were molded and cast in four pits, two 40 feet long, and two 37 feet long, each was 17 feet wide and 10 feet deep.

Want Cars for Gary.

Steel casting firms in the Pittsburgh district have received inquiries for 100 ingot cars and 200 charging cars, from the Gary, Ind., plant, of the Steel Corporation.

NEW EQUIPMENT.

Rebuilding Dunbar Stack.

The Dunbar Furnace Company has about completed the work of rebuilding its No. 1 stack and expects to blow the furnace in about October 25, and increase the present production of the plant about 300 tons a day. A new blowing engine built by the Mesta Machine Company, Pittsburgh, has been installed and a number of improvements made to the furnace.

The company's No. 2 stack was blown in during the spring of 1907 and has been in operation continuously. On October 15, the furnace had produced 226,756 tons of pig iron, and as the stack is in good shape the indications are that it can be operated steadily for another year.

A large sand dryer with a capacity of 30 tons an hour has been installed by the company in its sand plant and dry sand is being shipped up to the capacity of the plant.

Pumps and Compressors.

The Hall Steam Pump Company, Pittsburgh, is operating its plant at capacity, and is well supplied with orders for standard pumps and compressors. The company reports the following sales of special machines:

Thompson-Connellsville Coke Company, two triplex air compressors with capacity of 800 cubic feet of free air per minute, compressed to 1,000 pounds for supplying mine locomotives in the Republic works; Ashtabula Bowl & Socket Company, Ashtabula, Ohio, two low-duty compressors; Gale Manufacturing Company, Albion, Mich, light duty compressor for forging work; American Window Glass Company, Pittsburgh, 10x15x14 compressor; Pennsylvania Steel Company, Steelton, Pa., compressor for riveting; F. J. Foye, 14x15x14 straight line compressor for operating rock drills.

For Rust-Proof Conduit.

The National Metal Molding Company, Pittsburgh, has been awarded contracts for installing "Sheraduct," a rust-proof non-corrosive conduit, in the Oliver building, Pittsburgh; the Chicago & Northwestern Railroad depot, and the Peoples Gas, Light & Coke Company's building, Chicago; and several other large buildings in course of construction.

Gas Engines.

N. C. Davison & Company, Pittsburgh, report the following sales of gas engines, pumps and equipment:

Follansbee Water & Light Company, Follansbee, W. Va., 80-horsepower Riverside gas engine; Park Place hotel, Se-

wickley, Pa., 17-horsepower Jacobson automatic gas engine for electric light plant; R. W. Mathews, Keown, Pa., six-horsepower gas engine, Monitor pump and generator for light plant; Oliver building, Pittsburgh, bilge pump; Harry Childs, Stoops Ferry, Pa., six-horsepower Jacobson gas engine and a Gould triplex pump.

Bridge Railing Orders.

The Chester B. Albree Iron Works Company, Pittsburgh, has orders for 6,000 feet of bridge railing for the Deniston avenue viaduct, Cleveland, Ohio; 4,000 feet of railing for the Oakmont bridge, Pittsburgh, being erected by the American Bridge Company, and 2,500 feet of railing for the Monongahela City bridge, being erected by the Fort Pitt Bridge Company. The structural department of the company's plant, is being operated steadily and a large force is employed in the machine department, where the company manufactures pneumatic hammers, riveters and other appliances.

For Isthmian Supplies.

The Isthmian Canal Commission, Washington, D. C., is asking for estimates on supplying steel castings, body bolsters, spur wheels, steel angles, sheet steel, bar iron, sheet iron, pipe fittings, lag screws, bolts, furnaces and tools of various description. Blanks and general information relating to this circular, No. 539, can be obtained at the office of the general purchasing agent, Washington, D. C., or the assistant purchasing agent, Pittsburgh.

Demand for Relaying Rails.

M. K. Frank, Pittsburgh, dealer in relaying rails and scrap material, reports an increased demand for relaying rails, owing to heavy purchases by railroad interests. During the week the firm has sold 2,000 tons of standard and light sections at \$23, and better.

Gear Wheel Business Brisk.

The National Gear Wheel Company, Pittsburgh, is operating its plant at capacity, and is well supplied with orders. The company manufactures gear wheels for rolling mill and other heavy installations.

New Structural Firm.

Papers of incorporation were issued in Ohio last week to the McAllister Byrne Construction Company, of Girard, to make iron structural work. The capital is \$25,000. M. McAllister, John H. Byrne, S. K. Hines, E. H. Lotze and W. R. Phibbs are the incorporators.

Try a Want or For Sale ad in the Industrial World.

NEW CONSTRUCTION.

McKeesport Tin Plate Addition.

S. Diescher & Sons, Pittsburgh, engineers for the McKeesport Tin Plate Company, have awarded the following contracts for the addition in course of construction at the company's plant at McKeesport:

Lawrence Steel Construction Company, general contractors; Riter-Conley Manufacturing Company, Pittsburgh, structural steel work; Allis-Chalmers Company, electrical machinery; George J. Hagan, Peoples Bank building, Pittsburgh, furnaces.

Mr. Hagan was formerly connected with Edward E. Erikson, who for a number of years was recognized as one of the leading constructing engineers in the country. Mr. Hagan's contract calls for the construction of 10 sheet and 10 pair furnaces, seven double annealing furnaces and five gas producers. He will receive estimates until October 23, for the material required, including brick, bindings, castings, steel plate work, rods, piping, connections and stacks

New Ore Cars Ordered.

The Summers Steel Car Company, Pittsburgh, reports the sale of 20 center dump iron ore cars to the Cromwell & Lebanon Railroad Company, Lebanon, Pa.; and two center dump cars to a western copper mining company. These cars are equipped with two 35-horsepower electric motors on motor trucks and will be operated by electricity.

Isabella-Connellsville Improvements.

George S. Baton & Company, Pittsburgh, engineers for the Isabella-Connellsville Coke Company, have awarded the following contracts for improvements being made at the company's mines: William B. Scaife & Sons Company, Pittsburgh, steel coal tippie; Geary Boiler Company, Oil City, Pa., boilers; Connellsville Manufacturing & Mine Supply Company, ventilator fan; Westinghouse Company, Pittsburgh, dynamos and electrical equipment.

To Equip Pacific Coast Furnaces.

The Irondale Steel Company, Fort Townsend, Wash, the first steel plant to be built west of the Rocky Mountains, has just placed a contract with Tate, Jones & Company, incorporated, Pittsburgh, for the complete oil burning equipment for the two 20-ton open hearth furnaces. The contract includes burners, pumping systems, ladle driers, etc.

Bronze Company's Foundry.

The Damascus Bronze Company, Pittsburgh, has about completed the erection of a 75x100-foot addition to the foundry

department of its plant. The building is of steel frame and brick construction and when completed will increase the capacity of the foundry and machine departments about 50 per cent. Machinery is being installed in the new department, which will be in operation this week.

The company is well supplied with orders for journal boxes and other castings and is operating at capacity. The improvements made represent an investment of over \$30,000.

COKE RATINGS DIFFER.

Railroads Fix Different Schedules for Furnace and Foundry Grades.

Confusion has been caused in quotations on coke freights by railroads recently by the separation of furnace from foundry coke, and the giving of a special low rating to furnace coke by reason of the higher risks in carrying foundry coke.

This margin between the two grades of coke is only made in some districts. The railroads claim that since the destruction of a car of foundry coke is more costly than one of furnace coke, they are justified in charging a higher rate. A revision of coke rates is said to be under way, which may result in the announcement of some changes within 30 days.

The following table, compiled by the Connellsville "Courier," details the varying points where separate ratings are made on furnace and foundry coke. As will be seen, the discrimination only occurs at seven points.

	Fdry.	Fdry.
Pittsburgh	\$.75	\$1.80
Akron, O.		1.50
Bay City, Mich.		2.65
Beaver Falls, Pa.		1.20
Bellville, Ill.		2.80
Cairo, Ill.		3.30
Cairo, Ill., when destined beyond		2.80
Canal Dover, O.		1.40
Chicago, Ill.	2.25	2.65
Chillicothe		2.00
Cincinnati, O.		2.10
Cleveland		1.65
Columbus		1.65
Dayton, O.		2.00
Detroit	2.00	2.25
East St. Louis, Ill.		2.80
Evansville, Ind.		2.80
Ft. Wayne, Ind.		2.80
Indianapolis, Ind.		2.35
Mayville, Wis.	2.60	2.80
Milwaukee, Wis.	2.55	2.75
Peoria, Ill.		2.70
Terre Haute, Ind.		2.65
Valley Furnaces	1.35	
Wheeling, W. Va.		1.35
Oil City, Pa.		1.60
Buffalo, N. Y.	1.65	1.90
Toledo	1.85	2.10
Frie, Pa.		1.65
Shenango, Pa.		1.50
Harrisburg		1.80
Boston		3.50
Baltimore		2.15
Louisville, Ky.		2.65
New York		2.85
Richmond, Va.		2.95

PLANTS IN NEW HANDS

Union Sheet & Tin Plate.

The recently-organized Union Sheet & Tin Plate Company, with headquarters in the Farmers Bank building, Pittsburgh, which recently purchased the plant of the Marietta Sheet & Tin Plate Company, at Marietta, O., last week announced the closing of the deal for the purchase of the plant and business of the Hazleton Sheet Steel Company, at Hazleton, Pa., including rolling mills, galvanizing works and steel roofing factory for the manufacture of the highest grade black and galvanized flat or corrugated sheets and all forms of steel roofing products, eave trough, conductor pipe, etc.

The Hazleton plant was operated until recently by the Hazleton Sheet Steel Company. The plant was built less than two years ago, the equipment of the 7-mill "Tuscora plant" of the United Sheet & Tin Plate Company, at Newcomers-town, Tuscarawas county, O., having been taken over and moved to Hazleton. The Marietta plant, now being operated by the Union Company also was formerly operated by the United Sheet & Tin Plate Company, and consisted of four-mills, three 32-inch and one 28-inch, the principal product being black plates for tinning, polished steel and specialties.

The company announces it will not make tin and terne plates before January 1, but is seller of black and galvanized sheets and sheet metal products. The product of the Hazleton plant includes steel roofing, galvanized flat or eave trough, conductor pipe, etc. The plant is now in operation. The Hazleton plant will be within 10 days.

Tidewater Steel Company Sale.

The sale of the plant of the Tidewater Steel Company, at South Chester, Pa., to party of Youngstown, O., men, is being held up by stockholders of the company. The property, which has been remodeled recently, and includes one stack at South Chester, was taken over by Robert McCurdy, Charles Hart and Myron Wick, of Youngstown, and the purchase was closed by the receiver pending approval by the court. Mr. Hart was formerly with the Republic Iron & Steel Company, later with the Inland Steel Company, and then with Worth Brothers, at Coatsville, Pa. Mr. McCurdy is the son of a wealthy Youngstown financier and will probably head the company. The plant was reported sold a year ago by the receiver at \$305,000, but the New York purchasers failed to complete the deal. In the present instance, stockholders repre-

senting 1,200 shares of stock in the old Tidewater Company, secured a rule of court to show why the receivers' sale should not be set aside. The argument on the rule was heard October 16. A decision is expected this week.

To Operate Waynesburg Plant.

The purchasers of the Waynesburg Forge & Sheet Company's plant, at Waynesburg, Pa., who recently bought the mills at receiver's sale for \$22,000, will operate them under the name of the Osterberg Tin Plate Company. Much new machinery will be installed. The forge and bar mill part of the plant will not be operated and enough of the unnecessary equipment is being disposed of to cover almost the original price paid for the plant.

H. Osterberg, general manager, and H. J. Scanlon, superintendent of the new company, have had 18 years' experience in the tin plate business, having been connected with the old United States Iron & Tin Plate Company, which operated one of the first tin plate plants in the United States, and since the formation of the American Sheet & Tin Plate Company have been connected with several of that company's plants. Mr. Osterberg was manager of the United States Works of the American Sheet & Tin Plate Company for about three years. Both have lately been connected with the Washington Tin Plate Company, Washington, Pa. The other officers of the company are capitalists and are as follows: I. N. Kuhn, president; R. L. Hoskinson, vice president; Ellis B. Baily, secretary, and R. R. Hardesty, treasurer.

To Improve Car Plant.

President John M. Hansen, of the Standard Steel Car Company, of Pittsburgh, last week inspected the South Baltimore Steel Car & Foundry Company's plant, at Curtis Bay, recently taken over by the company. Press reports quote Mr. Hansen as saying the plant was far from modern and would need the expenditure of a considerable sum in improvements immediately.

Patent Suits in Court.

In the United States Court at Pittsburgh, Judge Charles P. Orr, handed down opinions overruling demurrers filed by the defendants in the equity suits of the American Stoker Company against the Erie Foundry Company, and John M. Conroy against the Penn Electrical & Manufacturing Company. Both relate to infringements on patents.

CRUCIBLE STEEL CO.

Plan to Amend Charter Opposed.

The proposed amendments to the certificate of incorporation of the Crucible Steel Company of America, to be voted on at the annual meeting to be held in Jersey City October 20, have caused some discussion among the stockholders. Last week Robert C. Hall, of Pittsburgh, issued an open letter to President Frank B. Smith concerning the matter. It follows in part:

"Frank B. Smith, Esq.,

"President, Crucible Steel Company of America, No. 15 Exchange Place, Jersey City, N. J.

"Dear Sir: In further reference to your telephone request to-day for my proxy for use at the annual meeting of your company on the 30th day of October, 1909, and our discussion as to the advisability of a stockholder entrusting to you his power of attorney for use at such meeting, permit me to further state that according to your notice of said meeting, the board of directors deem it advisable to amend Section 8 of the certificate of incorporation by adding thereto the following clause:

"The corporation may also purchase or otherwise acquire and hold, sell, assign, transfer, or otherwise dispose of shares of its own corporation stock."

"In answer to my direct request, you declined to accept my proxy with the understanding that you vote it against this proposed amendment. It seems to me that this matter is one which should receive the fullest and frankest consideration by every present stockholder of your company, and as such a stockholder, I voice to you my emphatic protest against the passage of such an amendment for many reasons, some of which are as follows:

"First—The purchase and sale of the securities of the corporation should not be in the province of the board of directors, as unless such transactions are performed openly with full notice to each and every stockholder, no matter how small, giving every single stockholder a right to participate therein if only to the smallest degree, any further purchase or sale of the securities of the company by the board selected by its stockholders can only be in a surreptitious and secretive manner in the open market, and if the said purchase produces profit it is to the detriment of the smaller, or weaker, stockholder who is obliged to sell his stock; if at a loss, the funds of the company should not be diverted from their legitimate uses to buy stock at too high a price.

"Second—Now that the general business of the country is on a sound foundation and your company, in common with many others, is in a position to

make profits for its stock-holders, the attention of its board of directors and management should be diverted by stock market operations from the natural and logical business of the company. The temptation to use the funds of such a corporation in such operations in times of prosperity is too great and oftentimes overcomes the best judgment of the wisest board, and the stockholders of your corporation should hesitate very greatly before granting such extraordinary powers. If the corporation has funds at its disposal they should be distributed to the stockholders who have waited long and patiently for such a distribution.

"While I am fully aware that such a practice is widespread among many corporations in this country, yet I am convinced that it is one of the greatest dangers in our modern commercial life, and cannot but in the long run lead to very grave dangers and abuses.

"As to your intimation that it would be used solely and alone for the purchase of stock for profit-sharing among the employes of your incorporation, I feel sure that a frank and complete statement of this purpose submitted to each and every one of your stockholders alike will produce the desired result without any trouble and without any of the dangers above referred to.

"As stated to you over the telephone, I would be pleased to forward you my proxy, and that of other stockholders who have expressed themselves to me as opposed to this amendment, upon the condition that you vote them against such amendment.

"Awaiting your reply, I am very truly and sincerely yours,

"ROBERT C. HALL."

Extensions at Middletown.

The American Rolling Mill Company is arranging for a number of improvements to its plant at Middletown, Ohio, including additional open hearth furnaces, annealing furnaces and additional rolling capacity. The company manufactures a high grade of steel and kept its plant continuously in operation during the recent depression.

Moves Into Five-Acre Plant.

The Heine Safety Boiler Company, St. Louis, Mo., has practically completed its new plant and is installing machinery and equipment preparatory to moving into the new works. The company having outgrown the old plants, purchased a 10-acre plot in North St. Louis, and has erected buildings which cover over five acres of ground.

Try a Want or For Sale ad in the Industrial World.

PITTSBURGH DISTRICT STATISTICS

The Pittsburgh Chamber of Commerce has just completed a digest on the production of Pittsburgh district, as compared with the entire world, for the year 1907. Based on these figures which include the plants established within a radius of 40 miles of the city of Pittsburgh as a part of "Pittsburgh District," the Chamber puts for the following claims:

That Pittsburgh produces 17 per cent of the coal produced in the United States.

That Pittsburgh produces 32 per cent of the iron and steel manufactured in the United States and 24 per cent of the pig iron.

That Pittsburgh produces 20 per cent of the electrical apparatus, 71 per cent of the interlocking and signaling apparatus and 80 per cent of the air brake output of the country.

The total tonnage and output valuation figures summarized by the chamber in support of these claims follows:

Manufacturing establishments:
Number of establishments .. 3,601
Employes 236,000
Value of product \$618,466,871
Capital invested \$717,253,232
Payroll of mfg estab. \$150,000,000
Tonnage—(No freight in transit included.)

Railway Net Tons. 146,798,351
Harbor 14,395,816

Total 161,194,167
Coal production:

Net Tons.
Entire world 1,223,165,248
United States 480,363,424
Great Britain 299,970,677
Germany 226,773,605
Pittsburgh District 83,318,513
Austria-Hungary 53,100,750
France 40,708,215
Russia 28,685,532
Belgium 26,261,745
Japan 15,361,600
All other countries 51,930,700

Iron and steel production:

Gross Tons.
Entire world 52,217,930
United States 23,362,504
Germany 11,872,983
Pittsburgh District 7,446,950
Great Britain 6,635,000
France 2,781,520
Russia 2,778,414
Belgium 1,497,563
Austria-Hungary 1,477,197
All other countries 1,812,659

Rail production:

Gross Tons.
United States 3,633,654
Germany 1,390,711
Great Britain 832,576
Pittsburgh District 770,333
France 339,058
Belgium 300,785
Russia 306,878

Pig iron production:

Gross Tons.
Entire world 59,643,032
United States 25,781,361

Germany 12,671,685
Great Britain 10,114,281
Pittsburgh District 6,141,487
France 3,533,495
Russia 2,776,028
Austria-Hungary 1,843,080
Belgium 1,384,744
All other countries 1,538,357
Blast furnaces (number) 51
Open-hearth furnaces (number) 190

Coke production:

Net Tons.
United States 40,779,564
Pittsburgh District 16,617,410

Electrical and auxiliary manufactures

United States \$250,000,000
Pittsburgh District 50,000,000

Air brakes:

United States 275,000
Pittsburgh District 225,000

Value of signaling and interlocking apparatus.

United States \$7,000,000
Pittsburgh district 5,000,000

Structural shapes.

Gross Tons.
United States 1,940,352
Pittsburgh District 889,066

Iron and steel pipe.

Gross Tons.
United States 2,720,000
Pittsburgh District 1,295,000

Tin plate production.

Net Tons.
United States 498,325
Pittsburgh District 179,135

Sheet steel production.

Gross Tons.
United States 1,084,700
Pittsburgh District 281,157

RAIL RE-ROLLING MILLS.

Maryland Company Is Reorganized. Newark, O., Mill Running.

The Maryland Rail Company, having a rail re-rolling mill at Cumberland, Md., will start in operation this week. The Buckeye Rolling Mill Company, the new company formed by the Steubenville purchaser of the re-rolling mill at Newark, O., has been running its mill for a couple of weeks.

The Maryland Company reorganized October 14, having passed out of the hands of the receivers. The new company, known as the United States Rail Company, has assumed charge of property and equipment of the old concern. The board of directors is composed of George M. Shriver and J. D. McCubbin, Jr., of the Baltimore & Ohio Railroad Company; J. P. Kelly, of the American Sheet Company, Pittsburgh; Henry Schriver, Howard H. Dickey, Harry E. Weber and Thomas F. Shannon.

The board elected Harry Schriver chairman; H. H. Dickey, president; Harry E. Weber, first vice president; W. Milnor Roberts, Jr., second vice president; Thomas Shannon, secretary-treasurer. Every preparation is being made to start the mills.

GAYLEY DRY AIR BLAST IN ENGLAND

In a paper before the British Iron and Steel Institute, in London, September 28, Greville Jones read a paper, which excited much discussion, on "The Uniform Moisture in Blast," and after the reading of this terminated the secretary read R. S. Moore's paper, entitled "The Fuel Economy of Dry Blast, as Indicated by Calculations from Empirical Data." The discussions following these papers turned largely upon the experiments made under the Gayley process, both in the United States and England.

A. K. Reese contended that Mr. Moore's results really proved what he held they disproved. To increase the moisture present in the blast, either intentionally or unintentionally, interfered with blast furnace economy. This was well known to all ironmasters. Poorer results were, therefore, to be expected with an increase of moisture; but here, on the other hand, results at least as good with increased moisture had been obtained as were got afterward with the ordinary working, which appeared to him to be proof of the benefit of uniformity of moisture. Uniformity was, in his opinion, a distinct benefit, and not, as Mr. Moore concluded, of no benefit. In support of this he drew attention to the fact that the benefits accruing from the introduction of the process proved of about the same order in the Gayley plants at South Chicago and at Cardiff. The reduction of moisture, however, at these two places was very different. At Cardiff the reduction was from about $3\frac{1}{2}$ grains to 1 grain—that is, a diminution of $2\frac{1}{2}$ grains per cubic foot; while at Chicago the reduction amounted to more like 6 grains. He thought the similarity of benefits pointed, therefore, to the importance of uniformity of the proportion of moisture present, and it was difficult to trace it to other factors. Uniformity of moisture meant uniformity of the oxidizing agent in the blast.

A telegram was read from Mr. Gayley, who stated that moisture having been added to the blast, additional consumption of coke was only to be expected. Uniformly high moisture was no better than irregularity of the quantity of moisture. Mr. Moore's calculations showed a saving of 14 per cent in the consumption of coke on the elimination of 5 grains of moisture. The next speaker was L. Sterne, who referred to the figures given in tables hung on the walls at the theaters and reproduced here. He said these figures could be relied upon as correct. If the output was increased by no more than 15 per cent, there was not only profit on the additional output,

but also that due to the decreased cost of the entire output. These amounts could be easily figured out, and it could be proved without difficulty that these profits would recoup the cost of the new or additional plant within 18 or 24 months. In the United States of America the Gayley system was now used on furnaces requiring 1,000,000 cubic feet of blast per minute. This was mainly due to the enterprise of the United States Steel Corporation. The two tables hung up on the walls were as follows:

Table 1—Gayley's Dry-Air-Blast Plant, Erected in 1907, for Messrs. Guest Keen & Nettlefolds, limited, Dowlais, Cardiff Works, by Messrs. L. Sterne & Company, limited.

Period—	Weekly Produc'n Tons	Coke per Tn of iron Lb.
Average for first 20 weeks of blast (natural air)	2,001	2,278
With dry-air blast and operated for increase in output (average age of four weeks)	2,286	1,857
Advantage of dry air for increased output—		
Increase of output		%26.4
Decrease of coke		%13.4
Advantage of dry air for decrease in coke consumption—		
Increase of output		%14.1
Decrease in coke		%18.4

The above data are given to show the elasticity of the dry-air process as applicable to commercial conditions.

Table 2—Dry-Air Blast (Gayley's Patent Process).—Savings by Dry-Air Blast (Compiled by a Committee of the United States Steel Corporation).

	Dols. s. d.
Saving in limestone through less coke used	0.05=0 2½
Saving in flue-dust*	0.04=0 2
Through increased regularity of metaal	0.05=0 2½
Duration of lining increased by 30 per cent	0.06=0 3
Counting 10 per cent increased production will reduce above mat'l.	0.10=0 5
Total	0.30=1 3

Saving in coke 15 per cent. Value of 10 per cent increase in output.

* In iron used for steel-making.

In merchant furnaces the make of desired grade is increased 75 per cent.

Mr. Rogers said it was six or seven years since the Steel Corporation took up the Gayley process, and he wished to ask how many furnaces were now working on the process. In reply to this Mr. Reese said that the Steel Corporation had now three furnaces at South Chicago and were building three others, in addition to the original furnace installed at Isabella. Plans had been got out for 20 others, but how far matters had advanced with regard to these he did not know.

Mr. Jones, in reply to the discussion, said that he thought Canada was going ahead in dry-blast installations even faster now than the United States.

The president, in moving a vote of thanks, said that experimental work with new processes was lengthy and costly. He hoped the work which had been carried, in these papers, one stage further, would be continued. Figures available from South Wales and elsewhere pointed to very considerable economy.

CANADA'S CEMENT COMBINE.

Control of Market Aimed at—Overproduction a Present Evil.

The following details of the new combination effected among the manufacturers of cement in Canada are furnished the United States Bureau of Manufactures by Consul A. G. Seyfert, of Owen Sound:

According to the returns made to the Dominion government by the cement manufacturers of Canada, the average price obtained by them at their works during 1908 was \$1.39 per barrel. This was the lowest price ever reported by the Canadian mills. In 1906 the aver-

age price was from \$1.65 to \$1.70, and in 1907 about \$1.60. At the beginning of the present year it was alleged by a number of manufacturers that even without any increase in price the business would be rendered more profitable by merging the large competing companies into one gigantic concern so as to be able to control the price and the output. The Canada Cement Company is the result, with a capital of \$30,000,000. The new company will own and control cement-producing plants at Montreal, Lakefield, Shallow Lake, Owen Sound, Calgary, Belleville, Hull, Marlbank, Port Colborne, Exshaw, and Quebec. These localities include points from the St. Lawrence river to the Rocky mountains.

The object of the merger is to eliminate the present excessive freight charges by distributing from the plant nearest the demand of the consumer, also to do without competitive salesmen and middlemen. The plants included in this combination are among the best constructed and most efficiently equipped

in existence, with a capacity of 4,500,000 barrels of Portland cement annually. During 1904 Canada manufactured 908,990 barrels of Portland cement and consumed 1,694,988 barrels. Almost one-half, or 784,630 barrels, were imported. In 1908 the consumption was 3,134,338 barrels, and the output 3,495,961 barrels, while 469,849 barrels were imported, which means that there was a surplus of 831,472 barrels on hand at the beginning of the present year. This caused a general depression in the cement industry and a reduction in prices to such an extent that the most of the plants were closed for the time being.

Inasmuch as the capacity of the output of the merger is greater by a million barrels than the annual consumption, it would appear as though the aim of the company was not only to control the output, but the market of the Dominion.

Canada is rich in the raw material—marl, limestone, etc.—that enters into the manufacture of Portland cement. Promoters have taken advantage of these opportunities, and cement plants were organized all over the country during the past decade. The result is that the production is greater than the demand, and much money has been lost by the honest stockholders, for the promoter was not always too honest. The reorganization is not only to put the industry upon a paying basis, but to aid as far as possible many localities where valuable cement plants are located and which are the main local industry.

Among the names as directors of the new company are those of several Americans who are prominent in the American cement industry, which would mean that American capital is being invested in the organization of Canada's Portland cement industry.

Ship Twenty-One Steam Turbines.

During the month of September, Allis-Chalmers Company shipped a total of 21 steam turbines, none of which were of less capacity than 300 K. W. September shipments include the following:

Industrial Works, Bay City, Mich.; Noblesville Heat, Light & Power Company, Noblesville, Ind.; National Conduit & Cable Company, Hastings-on-Hudson, New York; city of Columbus, Ohio; Merchants Light, Heat & Power Company, Indianapolis; Eastern Pennsylvania Railway Company, Pottsville, Pa.; Wilkes-Barre Gas & Electric Company, Wilkes-Barre, Pa.; Virginia Electric Power & Water Company, Virginia, Minn.

Lots of people talk to themselves because there is nobody of any consequence to answer back.

NEW COMBINATIONS.

Canadian Car Merger.

Reports from Toronto, Can., say negotiations are in progress in Montreal for a big merger of car companies, including the Canada Car Company, and the Dominion Car & Foundry Company, of Montreal, and the Rhodes-Curry Company, of Amherst, N. S. The Canada Car Company is capitalized at \$3,000,000 and the Rhodes-Curry Company, at the same amount. The final decision has not been reached, but it is regarded as assured that an amalgamation will be effected.

Holding Company for Telegraphs.

The Continental Telegraph & Telephone Company has been incorporated in New Jersey with \$50,000,000 capital. According to the articles of incorporation the purpose of the new company is "to unite and consolidate any telegraph, telephone or cable lines and systems into one or more systems, and to equip, maintain, operate, rent, sell or otherwise dispose of all or any part of any such consolidated system or systems." Projectors, who are represented by Phelbin, Beekman & Menken, New York attorneys, refused to make any statement.

Steel Plant for Michigan.

John T. Jones, a well-known mining man of Iron Mountain, Mich., who brought about the resumption of operations at the Empire mine, on the Cascade range, a few years ago, has in view the establishment of a steel plant to cost \$1,000,000 and to be located either at Escanaba or Menominee, Mich. Representatives of Mr. Jones claims he has over \$1,000,000 behind him, and Eastern men with unlimited capital.

The plant Mr. Jones has under contemplation would permit the manufacture of steel without the cost of freighting the ore to the lake ports, the local press of Menominee, declare.

Electric Companies to Merge.

At Albany, N. Y., last week authorization was given by the New York Public Service Commission, to the merging by the Nassau Light & Power Company of the Nassau Gas, Heat & Power Company, the Floral Park Light & Power Company and the Oyster Bay Electric Light & Power Company.

Chicago Harbor Plans.

The Western Society of Engineers has appointed a committee to represent the society in conferring with committees of the Chicago City Council and others in regard to the plans for the development of harbor for Chicago. The com-

mittee consists of A. Bemet, W. L. Abbott, L. E. Ritter, E. C. Shankland and Willard A. Smith.

Ashtabula's Shipbuilding Plant.

By a vote of Ashtabula's electors on a bond issue proposal on October 14, it was assured of the removal to Ashtabula of the St. Clair plant of the Great Lakes Engineering Company and the erection of a \$1,000,000 shipbuilding plant. In a total of 2,916 votes 44 were cast against the issue of \$390,000 in bonds to straighten the river, a first condition of the establishment of the plant. The company during the week signed a contract to remove to the new site if the bond issue was approved by the voters.

For Canadian Shipyards.

Press reports from Ottawa say that Harland & Wolff and other British shipbuilders have intimated to the Canadian government that they would build a shipyard in Canada if a sufficient bonus were given. Canadian firms are after the yards, but no decision has been reached.

Edison Extensions at Chicago.

The Commonwealth Edison Company, of Chicago, will spend \$400,000 on the east section of its new Quarry street plant. When completed, the east and west sections will represent an investment of \$1,100,000 for buildings alone.

Bridge and Building Convention.

The nineteenth annual convention of the American Railway Bridge and Building Association will be held at the Windsor hotel, Jacksonville, Florida, October 19-20. Large parties from Eastern cities left last week to attend the meetings.

Enlarged Stove Plant.

The Raymond Manufacturing Company, of Middletown, Pa., makers of Middletown stoves, started October 10, the erection of an addition to its plant to take care of the greatly increased demand upon its capacity. The new building is 30 feet by 80 feet, and its completion will increase the company's capacity by 12 stoves a day. Further enlargements are intended for 1910, said C. W. Raymond, vice president and general manager.

Detroit Car Plant Rushed.

Dispatches from Detroit say that continuous work for a long period is assured the Detroit plant of the American Car & Foundry Company by the booking of an order for 200 freight cars for the Chicago Great Western. This order, coming before the completion of New York Central and Chicago & Northwestern orders, gives work that will keep the plant busy through the winter.

FRANKLIN INSTITUTE.

Program for Session Includes Wide Range of Subjects.

The preliminary program for the Franklin Institute, at Philadelphia, for the session of 1909-10 covers a wide range of topics for the weekly meetings. Among the papers announced are these:

The Electric Pig Iron Furnace and The Electric Steel Furnace—Dr. Joseph W. Richards, Lehigh University, South Bethlehem, Pa.

Recent Developments of Electric Lighting—Arthur J. Sweet, Westinghouse Lamp Company, Bloomfield, N. J.

Three Centuries of Glass. Illustrated—John I. Arbogast, Arbogast-Brock Glass Company, Pittsburgh.

Mechanical Testing of Metals—Gus L. Backstrom, William Sellers & Company, Philadelphia.

Bakelite, Illustrated—Dr. Leo Baekeland, Yonkers, N. Y.

Centrifugal Stresses in Rotating Masses—B. A. Behrend, Pittsburgh.

Light and Its Correct Measurement—Dr. Edward P. Hyde, National Electric Lamp Association, Cleveland, O.

Electric Railway Signals—Carl P. Nachod, Nachod Signal Company, Philadelphia.

The Use of Concrete Piles. Illustrated—William F. Hall, Raymond Concrete Pile Company, Pittsburgh.

Telephone vs. Telegraph for Steam Railroad Dispatching—W. E. Harkness, Western Electric Company, New York.

Air Brakes. Illustrated—Walter V. Turner, Westinghouse Air Brake Company, Pittsburgh.

The Open Hearth Process—Professor Bradley Stoughton, New York.

SPEED IN ORE LOADING.

New Record at Two Harbors.

Pittsburgh steel men were startled by the report received here early last week of the record time for loading the ore carrying steamship W. E. Corey of the Steel Corporation line at Two Harbors, Lake Superior, on October 10. The Corey was tied at the ore dock there when the ore pockets on the dock were full and trains of steel cars loaded with ore were standing over the pockets, the cars being ready to drop their load as the pockets emptied.

The vessel began loading at 2:17 o'clock and at 2:56 o'clock, or just 39 minutes after, it was loaded with 10,111 tons of iron ore, ready to be moved out for the lower ports. The loading was at the rate of a little over 259 tons a minute.

The steel cars used for bringing the ore to the docks are of a new pattern, and were built in Pittsburgh under what is known as the Summers patent.

PERSONALS.

J. A. Bradley, Pittsburgh representative of the Van Dorn Electric & Manufacturing Company, Cleveland, Ohio, reports that his company began operating its plant double turn last week, owing to the rapid increase in demand of electric drills. The company manufactures electric drills and reamers in sizes ranging from those used on wood and light machine work to machines required for the heaviest structural work.

Among the Pittsburghers elected to membership in the American Society of Civil Engineers by the Board of Directors at its October session were: B. A. Behrend, advisory engineer, Westinghouse Electric; Edward Godfrey, of R. W. Hunt & Company; C. L. Woodridge, supervising engineer, Gillespie Company.

Severn P. Ker, who has become general manager of the Sharon Steel Hoop Company, was given a complimentary dinner at Pittsburgh, October 10, by the sales managers of the Republic Iron & Steel Company, with whom he had formerly been associated as general manager of sales.

C. R. Wilson, formerly of the Jones & Adams Company, Chicago, and previous to that time connected with several coke concerns, has been appointed manager of the Uniontown, Pa., office of the Moreland Coke Company, Bessemer building, Pittsburgh.

C. A. Poe, well known in steam practice circles in Pittsburgh, has disposed of his interests in that city and accepted a position with the Wright Manufacturing Company, Detroit, Mich., in charge of the mechanical department, succeeding H. H. Humphrey, deceased.

William T. Francis, Empire building, Pittsburgh, has been appointed local representative of the American Specialty Company, Chicago, Ill. The company, Chicago, Ill. The company manufactures a line of high-speed twist drills and "Use-Em-Up" sockets.

Walter J. Tomlinson, special representative of the H. G. Kotten Company, New York, manufacturers of air compressors, rock drills and pneumatic tools, was in Pittsburgh last week in the interest of his firm.

Leo G. Smith has resigned his position as superintendent of the Bucyrus Steel Casting Company, Bucyrus, Ohio, to accept a similar position with the Londonderry Steel Foundry at Londonderry, Nova Scotia.

Mr. Niven McConnell, formerly presi-

dent of the McConnell Engineering & Machine Company, Tacoma, Wash., has been appointed superintendent of the works of the Standard Steel Cor Company.

George C. Campbell, ex-county clerk, of Warren, Ohio, has purchased an interest in the Niles Forge & Manufacturing Company, Niles, Ohio, and has been elected secretary and treasurer of that company.

S. A. Richards, for many years general superintendent of the blast furnace of the Struthers Furnace Company at Struthers, Ohio, has resigned, effective December 31.

F. U. McGraw, who is connected with the sales department of the Erie City Iron Works, Erie, Pa., has been transferred from the Buffalo, N. Y., office to the Pittsburgh office.

Leo Mehan, formerly of the Mehan Boiler Company, Lowellville, O., has been appointed assistant superintendent and master mechanic for the Ohio Iron & Steel Company.

OBITUARY.

ALBERT J. PERKS.

Albert J. Perks, president of the Webster & Perks Tool Company, Springfield, Ohio, died October 4, aged 58 years. He was born in Birmingham, England, and was brought to this country by his parents, who located at Dayton, Ohio. When 18 years old he removed to Springfield, where he became interested in manufacturing. He was for a number of years superintendent of the old Whiteley Manufacturing Company, and in 1891 with John F. Webster founded the Webster & Perks Tool Company.

* * *

BENJAMIN EATON.

Benjamin Eaton died October 10 at Los Angeles, Cal. He conceived and constructed the first city waterworks for Los Angeles. For years he worked to show the use of scientific irrigation, and worried, fought Indians and struggled with untold hardships and privations to prove his theories, and created millions of wealth by his irrigation projects. He was born in Plainville, Conn., in 1823.

* * *

WILLIAM T. LEGGETT.

William T. Leggett, president of the William T. Leggett Company, and well known in the cement industry, died at his home in Pittsburgh, October 11, after a lingering illness. He was born in New York city 66 years ago, and came to Pittsburgh 23 years ago.

CAR SHORTAGE FELT.**Pittsburgh Shippers Are Beginning to Hear Complaints.**

Railroad interests centering in Pittsburgh are beginning to receive complaints of a shortage of freight cars in the district owing to the heavy resumption of traffic on all coal and ore carrying lines. The various yards in the Pittsburgh district which were stocked with dismantled and idle cars a few months ago have been cleaned up and all idle cars have been pressed into service.

Miles of unused siding which had been lined with idle engines which had been leaded to protect them from the weather, have been cleared and practically all of the available motive power is being overhauled, repaired and placed in service. Each locomotive placed in commission means an additional crew in the service of the railroads and the complement has about reached normal.

One day last week 104 trains of west bound freight were transferred from the Pennsylvania main line to western divisions at Pittsburgh, making a record of freight movement in this direction.

ENGINEERS' SOCIETY.**Rapid Transit to Be Discussed.**

The next session of the Engineers' Society of Western Pennsylvania, on October 19, at 8 p. m., in the Chamber of Commerce rooms at Pittsburgh, will be devoted to a discussion of "Rapid Transit for Pittsburgh," with Dr. John A. Brashear, Thomas H. Johnson and Lee C. Moore as the principal speakers. An informal discussion will follow.

Gas Engine Trades Meeting.

The annual meeting of the National Gas and Gasoline Engine Trades Association will be held at the LaSalle hotel, Chicago, November 30 and December 1 and 2. The program is well under way and the papers will be such as will interest everyone who is associated with the gas and gasoline engine industry. The association has, in less than a year's time established a place for itself that is proving of value to the members, and the officers feel confident that the work of the body will continue to prove of lasting benefit to the industry. There will be an opportunity at the Chicago meeting for the display of small articles.

For New Auto Plant.

According to reports from Sonnorsville, Ind., the Lexington Motor Car Company, it is reported, will soon ask bids for the erection and equipment of factory buildings there.

REVIEW OF TRADE CATALOGS.

Lifting magnets for all purposes are described in a catalog issued by the Electric Controller & Manufacturing Company, Cleveland. The catalog is illustrated with views of installations at the Carnegie Steel Company's plant, Homestead, Pa., where three 6,000-pound ingots were lifted by a single magnet; 24 60-foot rails lifted by double magnets, and numerous other illustrations at plants in various parts of the country. Advantages in using lifting magnets are presented, prominent among them are the breaking of castings with skull crackers and securing all scrap and small particles in cars and yards.

The Northern Engineering Works, Detroit, has issued catalog No. 25, giving descriptions and illustrations of a number of recent installations of electric traveling cranes, locomotive cranes, air hoists and other hoisting apparatus. In addition to a line of cranes of any speed or capacity desired the company manufactures coal and ore handling machinery of various designs.

The Nelson Valve Company, Philadelphia, has issued a 12-page booklet, illustrated with reproductions of the double disc taper seat type of valve manufactured by the company, which show the efficiency of the valve under various tests. The company manufactures gate, globe and check valves for all purposes and pressures.

A vest pocket manual for engineers, has been issued by the University of Tennessee, Knoxville, Tenn., which contains a description of the university, the courses of study and other data relating to the school; also numerous tables compiled by Charles E. Ferris, professor of mechanical engineering. The manual sells at 50 cents.

Concrete canal locks constructed at Harvey, La., are a new feature presented in Bulletin No. 65, issued by the Universal Portland Cement Company, Pittsburgh and Chicago. Illustrations of concrete work on the filtration plant, Pittsburgh, and concrete grain bins at Minneapolis, Minn., are also interesting features of the bulletin.

The October issue of "Industrial Progress" contains an elaborate article on the Brilliant water works pumping plant, at Pittsburgh, and a special paper on "Treatment of Steel in Electric Furnaces," by Prof. Henry M. Howe, of Columbia University.

Morris Bachman, president of the Sharon Steel Hoop Company, Sharon, Pa., is seriously ill from a reaction following an attack of typhoid fever.

FIRES AT INDUSTRIAL PLANTS.

Newark, N. J. — Fire destroyed the plant of Kraeuter & Company, manufacturers of tools and hardware, Eighteenth avenue and Seventeenth street, October 8. The fire started in the drop forging department. The damage is estimated at \$20,000.

Milton, N. H. — Boston Ice Company's entire plant, 13 ice houses, tool house and nine freight cars, destroyed October 9; loss \$100,000.

Elkins, W. Va. — The plant and yards of the Oakland Lumber Company, at Rinard destroyed October 10; loss \$10,000, partly insured.

Pittsburgh—Boiler room at No. 1 Eliza furnace, Jones & Laughlin Steel Company, \$15,000 damage by explosion October 11. Storage house destroyed.

Horseheads, N. Y. — Plant of Horseheads Brick Company destroyed October 4. Loss \$100,000. Insurance \$25,000. Explosion.

Trenton, N. J. — Empire plant of Trenton Potteries Company damaged \$3,000 October 7. Two firemen injured.

St. Louis, Mo. — Nat McGuire's Oil & Supply Company was damaged \$10,000 October 2.

Portsmouth, Va. — Plant of Standard Box & Lumber Company destroyed October 4. Loss \$80,000.

Passaic, N. J. — Plant of the Foxhall Brick Company destroyed October 4. Loss \$50,000.

Lockport, N. Y. — Evaporator plant of Robert Arlington at Jeddo destroyed October 1. Loss \$5,000.

Smoke Elimination in Indiana.

A hot water plant to be used as a means of eliminating smoke is being erected at the Shelby street roundhouse of the Big Four Railroad Company in Indianapolis. The plant will cost about 10,000, and when completed engines will be supplied with hot water, and this will lessen the time and, incidentally, the consumption of coal in getting up steam.

The company is also equipping an engine with a smoke preventer, and it is expected the engine will be ready for a demonstration this week. If the device proves satisfactory, all of the Big Four engines used in running into the city will be equipped with the device.

The Harlan & Hollingsworth Company, of Wilmington, Del., is planning further extensions and will build new additions costing about \$75,000.

USING NATURAL GAS IN BAVARIA

Information respecting an interesting utilization of the dreaded explosive hydrocarbon of coal seams, methane CH_4 , has recently become available from the Frankenholz Colliery of the Frankenholz Bergwerks-Gesellschaft, near Mittelbesebach, in Rhenish Bavaria. The mine has a depth of 500 metres, and before attacking the coal-seam at that level it was deemed advisable to bore to a depth of 50 metres in order to see whether much gas might have to be dealt with. When this was done a great deal of gas escaped under considerable pressure, and a pipe-line 1,500 metres long (nearly 1 mile) was taken to the surface. This was in February, 1908. As the pressure of the gas was still 12 atmospheres in June, 1908, the Dingler Maschinnenfabrik A.-G., of Zweibrücken, was asked to fit up the boilers of the colliery for burning this methane. In order not to waste any heating surface of the two internal furnaces, and to secure a complete combustion of the methane, the following arrangements has been adopted:

Two combustion chambers, consisting of two cylinders, placed alongside one another, have been constructed in front of the boiler, each chamber communicating through a neck of smaller diameter than the combustion chamber, with the internal furnace. The gas is introduced through the front of the cylinder by a central pipe, inside which a small air-pipe has been provided. The main air supply is, however, through a crescent-shaped inlet, closed by an adjustable slide. The front of the chamber is further fitted with a door; through this door a torch is introduced before the gas admission valve is opened, to fire the jet before an explosive mixture is formed. The combustion chambers are built of firebrick, and a layer of asbestos is interposed between the outside of the firebricks and the cylindrical iron shell.

The gas is fairly pure methane, containing about 8 per cent of nitrogen, traces of oxygen, and some water vapor. As far as possible, this vapor is condensed in the pipe-line of $6\frac{1}{2}$ -inch internal diameter, which is, for this purpose, provided with cylindrical condensers. Two methane bore-holes supply sufficient gas for two boilers, each of 700 square feet heating surface, and 40 kilogrammes of steam are produced per square centimetre of heating surface per hour (about 9 pounds per square foot). The temperature of the flue gases leaving the boiler furnace does not exceed 530 degrees, Fahrenheit. There is no exact determination of the gas consumption; but it is estimated that the methane burned is calorically equivalent to

about 16 tons of average quality coal per 24 hours. It is said that it is intended to resort to further boring, with the object of increasing the safety of the mine and of utilizing the methane gas.

NEW PRODUCT OF COAL TAR.

A product of coal tar which has many valuable characteristics for insulation bears the jaw-breaking name of oxybenzyl-methylengly-colanhydride. The public will be relieved to learn that, for general purposes, the material will be known as bakelite. It possesses some of the combined properties of hard rubber, celluloid and amber, being harder and stronger than the two first, although it does not have their flexibility. On the other hand, it withstands heat and is not attacked by solvents, and has the advantage of being much less costly. It is infusible and insoluble, and does not soften at such temperatures as 350 degrees, Centigrade. At the degree of heat which melts glass it chars without entering into fusion. It can be obtained transparent or opaque; can be mixed with filling materials, such as clay, asbestos, wood pulp and the like. It is said that generators and motors can be impregnated with the raw material, and, by the simple process of heating under pressure, synthesis of bakelite will take place in or around the fibers which cover the wires of the coils, the whole, therefore, being transformed into a hard, infusible, insulated mass.

Bakelite has been employed for molded insulators which possessed great mechanical strength, high insulating power and ability to withstand high temperatures. Cheap, soft wood, impregnated with bakelite, becomes as hard as ebony, is rot-proof and a good insulator. A coating of bakelite is said to give a beautiful finish on wood, which is not affected by boiling in water, in solvents or in chemical solutions.

Electrical Engineer Is Honored.

Henry Manson Byllesby, a former Pittsbureher, has been elected president of the Chicago Civic Federation. He is a widely known electrical engineer who in the early days of electric lighting was associated with Thomas A. Edison.

He was subsequently vice president of the Westinghouse Electric & Manufacturing Company and managing director of the British Westinghouse interests. He was born in Pittsburgh 50 years ago and is a graduate of Lehigh University, since leaving which he has devoted himself to the science of electrical engineering.

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METHOD OF PRESERVING COKE OVEN WALLS.

A patent recently granted in Great Britain to H. Koppers, 30 Isenbergstrasse, Essen Ruhr, Germany is thus described in the specifications:

It is well known that the treatment of certain kinds of coal in coke ovens is highly destructive to the walls of the ovens, more particularly at high temperatures. It has been found that the damaged walls, and the pieces broken therefrom, always contain a considerable quantity of easily fusible alkaline silicates, the presence of which has caused the bricks to become warped and to shrink and crack. The presence of these silicates is due to the presence of compounds of the alkali or alkaline-earth metals in the charge. If the bricks used for making the walls are rich in silica, and not pressed, scales and patches become detached therefrom; pressed bricks rich in alumina become distorted. The compounds referred to are soluble and insoluble salts, of which only small traces can be detected in the water dripping from the coal; this indicates that the said compounds are intimately mixed with the coal. The object of the present invention is to render the said compounds harmless to the oven walls.

The compounds referred to, usually chlorides, are decomposed by the heat, the acid (usually hydrochloric acid) being separated, and alkaline hydrates being formed with the water, which is present, in the form of vapor, even at the higher temperatures. The acid reacts with the ammonia, forming so-called fixed ammonia, and this amount of fixed ammonia, subsequently ascertainable, may be taken as an indication of the amount of alkali introduced with the charge. In apparent contradiction to this view is the fact that the coking of certain kinds of coal is not accompanied by destruction of the oven walls, though it results in the production of a large quantity of fixed ammonia. This is explained by the fact that the ash of such coal is rich in silica, with which the hydrates immediately react, so that the distilling or sublimation of the said hydrates is prevented. The present invention is based on the observation referred to, and consists in intimately mixing with the coal the amount of silica in which it is deficient for binding the hydrates formed by decomposition of the compounds of the alkali or alkaline-earth metals. This prevents reaction of the said hydrates with the silica in the oven walls, inasmuch as the tendency of the hydrates to react with this silica is directly and immediately satisfied by the added silica. The silica is preferably added in form of sand, as being the simplest and cheapest form available.

SPEND SIXTY MILLIONS.

Trans-Missouri railroads are preparing to spend \$60,000,000 to get in shape for handling the business of the era of prosperity which the railroad managers believe is upon the country west of the Missouri and north of the Kansas State line.

At Council Bluffs, Iowa, the Chicago & Northwestern Railroad is building new freight yards at a cost of \$500,000. And the Union Pacific, which has just completed new yards at a cost of \$250,000, is now preparing for the erection of a \$2,000,000 union station and transfer station, as well as for the construction of third and fourth tracks from Council Bluffs to Omaha, at a cost of \$500,000. The Northwestern also has under consideration a bridge over the Missouri river between Omaha and Council Bluffs.

In Omaha the new headquarters building for the Union Pacific, which will replace the antiquated structure now in use is to cost \$1,000,000, exclusive of the grounds, which will cost \$350,000 additional. At a cost of \$150,000 the Union Pacific is preparing an addition to its passenger station at this point. Then there are the new \$1,000,000 shops that that company is building in Omaha and which are almost completed. And lastly, so far as that road is concerned, are the McKean motor car shops and factory, a Harriman concern, which is spending money in large amounts.

The Burlington, always a competitor

of the Union Pacific, has just finished plans and is now asking for bids for a new freight depot in Omaha, the cost of which is to be \$1,200,000. That road is also building a new entrance from the West into Omaha, the cost approximating \$2,000,000.

The Northwestern, which last year built a new "outgoing" freight house in Omaha at a cost of \$250,000, has obtained grounds and is preparing plans for a duplicate building for incoming freight. The Missouri Pacific is constructing new gravity freight yards at a cost of \$400,000.

At Lincoln, Neb., all roads running into that city are getting together on a proposition to spend \$4,000,000 on a new union passenger station and freight terminals. Additionally, the Burlington railroad is spending \$1,500,000 on new machine shops at Havelock, a Lincoln suburb.

Around Denver the Union Pacific is spending or preparing to spend \$5,000,000 on different improvements. In the matter of construction work the Union Pacific is building and has almost completed a new cut-off from Topeka, Kan., to the main line in Nebraska, which will permit the Union Pacific to enter into the Omaha-Kansas City trade. The Medicine Bow cut-off, in Nebraska and Wyoming, is 200 miles long. In Colorado the Union Pacific is constructing 100 miles of road, and, lastly, 5,000 men are working on the double tracking from Omaha to Ogden, 1,000 miles. In

Wyoming the Burlington is building 250 miles of road through the mountains.

These are just a few of the expenditures now being made in the trans-Missouri country. Approximately there is \$25,000,000 for improvements of lines already built, and another \$25,000,000 for new construction work, to say nothing of the millions for new cars, locomotives and other equipment.

Trying to Establish Industry.

In a recent report on the manufactures of Brazil, Consul-General Anderson says:

One of the most notable features of the industrial situation in Brazil is that while it seems to have one of the greatest deposits of fairly high-grade iron ore in the world, if not actually the greatest, only about 3.5 per cent of its industries are such as relate to iron working in any form, and such establishments, as a matter of fact, work imported materials. This condition is due not only to a lack of fuel, as indicated, but also to lack of talent in the iron-working industries, such attempts as have been made to establish such industries in the past, even with the aid of the Government, having been expensive experiments. It is, therefore, or more than passing importance to Brazil that the Government has undertaken to secure the investment of foreign capital and the aid of foreign talent in the establishment of the iron-working industry in the country, an undertaking which is now in the course of development.

BITUMINOUS COAL PRODUCTION OF PENNSYLVANIA IN 1908, BY COUNTIES.

The statistics of bituminous coal production by counties in Pennsylvania, with the distribution of the product for consumption in 1908 are shown in the following table:

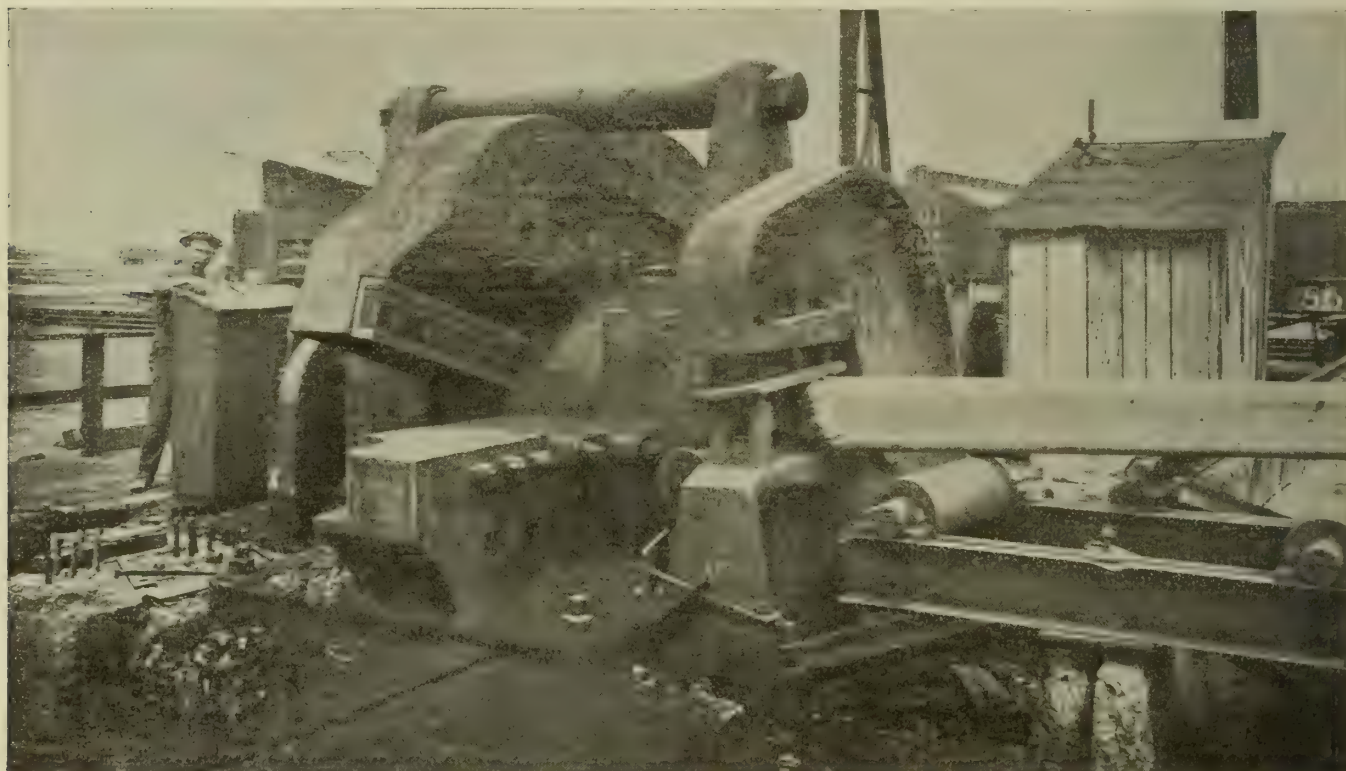
County	Loaded at mines for shipment.	Sold to local trade and used by employees.	Used at mines for steam and heat.	Made into coke.	Total quantity.	Total value.	Average price per ton.	Average number of days active.	Average number of employees.
Allegheny	13,551,805	302,056	229,082		14,083,843	\$ 14,843,665	\$1.05	180	22,384
Armstrong	2,611,071	80,110	86,266		2,777,486	2,736,542	.99	188	4,552
Beaver	142,605	77,682	2,424		222,711	261,537	1.17	211	309
Bedford	412,023	5,050	9,559	84,382	511,014	510,219	1.02	146	1,099
Blair	258,249	2,621	5,057	48,340	315,167	337,871	1.07	180	554
Rutler	772,343	13,838	16,281		802,462	808,205	1.01	207	1,339
Cambria	12,354,638	209,275	320,313	1,254,082	14,138,308	14,792,377	1.05	213	22,804
Center	1,058,824	24,562	2,998		1,086,384	1,021,227	.94	187	1,757
Clarion	937,310	10,845	24,630		972,785	967,940	1.00	190	1,882
Clearfield	5,783,688	79,552	164,355	219,939	6,247,534	6,049,552	.97	171	11,376
Elk	1,050,095	32,168	22,029	42,917	1,147,209	1,265,208	1.17	201	2,056
Fayette	5,798,619	266,951	487,870	12,920,977	19,474,417	19,707,839	1.01	214	19,866
Huntington	528,095	10,724	12,851	46,424	598,094	670,525	1.12	195	1,264
Indiana	6,441,351	28,587	175,120	108,121	6,843,179	6,359,687	.93	200	10,311
Jefferson	3,767,418	33,742	108,257	943,896	4,853,313	4,695,603	.97	170	6,202
Lawrence	117,808	13,637	11,194		142,639	168,371	1.18	126	355
Mercer	681,421	4,977	37,760		724,158	763,471	1.05	201	1,408
Somerset	7,150,123	53,878	198,101	2,843	7,404,945	7,848,656	1.06	236	10,244
Tioga	643,285	31,182	7,632		682,099	1,022,913	1.50	133	2,050
Washington	11,309,761	96,202	313,387	308,657	12,118,007	12,470,171	1.03	196	17,364
Westmoreland	15,555,657	330,457	572,765	5,040,413	21,499,292	20,915,077	.97	214	26,041
Other counties and small mines	433,818	93,157	7,506		534,481	590,647	1.11	229	744
	91,360,007	1,801,292	2,817,237	21,200,991	117,179,527	\$118,816,303	\$1.01	201	165,961

Huge Steel Lever Shear for Steel Corporation's Gary Plant

The shear shown in this illustration is one of two shears built for the Indiana Steel Company, to be used at the new steel plant at Gary, Ind. It is of the low knife type design with knives 36 inches long and will make 12 cuts per minute of cold soft steel 6½ inches square or seven inches round. It

molded, 88 teeth, 4½-inch pitch, 17½ inches wide over shrouds, diameter, 10 feet 6 inches. Gear and clutch are bushed with bronze. The main pinion is of cast steel, thoroughly annealed, 12 machine molded teeth. The motor gear is of steel and has 66 machine-cut teeth 1½ D. P., and 10-inch face, the pinion 18

a second shear of the same capacity, but of the high knife design with knives 44 inches long, which is now under course of construction at the plant of the Mesta Machine Company at West Homestead, Pa. The marked advantage of using steel castings in the construction of shears for special heavy service



One of the Two Shears Built by the Mesta Machine Company, for the Gary Plant, Ready for Installation.

is driven by a 150-horsepower induction motor running 375 R. P. M.

These shears are the largest of the lever type ever built and are made entirely of steel castings and steel forgings with exceptions of fly wheel, which is made of air furnace melted iron. The total weight of each shear not including motors is 225,000 pounds. The gear shield weighing an additional 9,000 pounds.

The main gear drives the crank shaft by a jaw clutch pulled out of mesh by a sliding pin. The sliding pin is operated by a 5-horsepower D. C. motor.

The main frame is made of steel casting in one piece thoroughly annealed, is about seven feet wide by 23 feet long and weighs 85,000 pounds. The lever is of cast steel well annealed and bored for main pin 13 inches in diameter. A bronze bearing is provided in the tail end of lever to receive pressure from upper end of pitman.

The main gear is of cast steel machine

teeth. The fly wheel is of air furnace melted iron, 9 feet in diameter, and weighs 25,000 pounds.

The main pin is of steel 13 inches in diameter. The crank shaft of steel 14 inches in diameter and 13 feet long. The bearing in frame at main gear is 14 inches by 24 inches, the other bearing in frame is 14 inches by 18 inches. The pinion shaft is 10 inches in diameter by 20 inches long in bearings.

The knives are of high grade tool steel with four cutting edges and are three inches by eight inches by 36 inches. The clutch operating mechanism is self contained and mounted on a substantial base.

The illustration shows the first shear as installed at the works at Gary, ready for work with the gag for holding the billet in place during the cutting operation.

The success of this shear being apparent resulted in the Indiana Steel Company placing an order at once for

has induced a number of concerns to place orders for similar shears of slightly lesser capacity, which are being constructed at the present time at the Mesta works.

New Foundry at Oil City.

The Portland Concrete Company, Thirty-fifth street, Pittsburgh, has been awarded the contract for the construction of reinforced concrete buildings for the Jarvis Reid Foundry Company, Oil City, Pa., for a foundry, pattern and storage buildings. The contract will require about 1,500 barrels of cement. Other contracts recently received by the company are the fireproof construction and concrete work on the Nurses' home at the Homeopathic hospital, Pittsburgh; concrete work and sidewalks for the Homestead library, East End, Pittsburgh; and sidewalks and driveways at the Harry Darlington residence, Irwin avenue, Northside, Pittsburgh.

Hamilton Coal Loading Machine at Eliza Furnaces.

There is now on exhibition at the Eliza furnace of the Jones & Laughlin Steel Company, in Second avenue, Pittsburgh, Pa., a pit-car loading machine. This machine is designed to load coal in mines and to follow any of the undercutting machines, such as the punchers, or the breast-chain machines manufactured by the Jeffrey, Pneumelectric, or Goodman companies. The machine is an innovation in coal producing devices.

An exemplification of this machine was witnessed by representatives of the trade press. While it was handling iron ore—a substance much heavier than coal—it carried it to the end of the conveyor with apparent ease, taking chunks much heavier than lumps of coal of the largest size common in mines, and rapidly. It is a product of the Hamilton Manufacturing Company, Columbus, Ohio.

It does not represent an attempt to mine the coal, dislodge and load it, but simply loads the coal after it is once

the case of iron ore, which is nearly three times as heavy as coal, the daily tonnage of the machine is more than doubled. Some of the advantages which are claimed for the machine by the makers are as follows:— That two men will load from 60 to 120 tons of run-of-mine coal per day, depending upon the height of the vein, the size of the coal cars and the facilities afforded the machine, such as prompt removal of loaded cars and having rooms always ready for the machine.

The loader is self-propelling and moves into the room; the front end is unloaded from the pony-truck, and the latter pushed out of the way until the next move of the machine is to be made. The anchor posts are then set, with their tops in the roof, inclining toward each other, and the feed-chain fastened to the foot of each post. The car is then placed in position to be loaded at the rear of the machine.

In gathering the coal, the universally-

but as the coal does not always fall from the shot in a uniform condition, it is necessary to have a man at the front end of the machine to see that the material falls into the path of the machine in as constant a flow as possible.

As soon as the car is filled the machine runner throws a clutch on the engine, which stops the conveyors and starts the car-puller drum. The car by this means is pulled out to the room-neck, and the rope, after being detached, is brought back to the switch-block on the machine and carried to the empty car on the siding. This is a method that has been worked out to handle the heavy cars that ordinarily require a gathering motor to do the shifting in the rooms. The sketch shows the method of handling both the machine and the mine cars.

The capacity of the machine, up to 40 tons per hour, is limited only by the number of cars which can be brought to it and taken away in the hour. While a three-ton car has often been loaded in three minutes, if the average be five minutes, and allow four minutes for switching, or an average of nine minutes per car, it would be 20 tons per hour, or 120 tons loaded in six hours. This allows two hours for moving from one room to another. It takes about 20 minutes to make a move. As the machine never leaves the track, the work of moving consists of putting the gathering end on the pony-truck, which is accomplished in five minutes, and running the machine by its own power to the next working place.

The delivery conveyor of the machine is properly called the picking-table, as it affords opportunity to clean the coal as it passes to the car. The man on the front end can also clean the coal from slate and bone as it enters the machine. The machine has worked in a five-foot seam from which 10 inches of dirt had to be cleaned. The delivery conveyor is also universally-mounted, and can be raised and lowered, or swung to load cars at the side of the machine as well as at the rear.

The machine picks up coal from the mine-floor at the rate of from 1,000 to 2,000 pounds a minute, leaving the floor as clean as if shoveled by hand. The machine's daily capacity is dependent upon the supply of coal that is ready to be loaded, prompt delivery of empty cars to the machine and equally prompt removal of the loads. General experience with the loader has resulted in the adoption of the system here outlined to secure the full benefits of mechanical loading.



Hamilton Coal-Loading Machine.

undercut by the standard machines, and does away with the arduous work of shoveling. It is simply two conveyors, as shown in the illustration. It is entirely simple, and is operated either by compressed air or electricity. The machine on exhibition is operated by compressed air, being equipped with two engines of 10 h. p. each. One is located on the main truck and operates the conveyors; the other is located on the sweep, and operates the feed, just as the crowder-engine pulls the dipper of a steam-shovel into the material. Although the machine is light, it never leaves the track and is, therefore, easily and quickly moved from room to room. The loading capacity is large, as when the troughs are running half full of coal or other material they carry up 40 cubic feet per minute. In

mounted-sweep is pulled one way or the other by the feed-chain, and the nose, which is four feet long, digs into the coal pile; the flights on the conveyor chain drag the coal up into the trough of the conveyor and deliver it to the car.

The conveyor chains travel at the rate of eighty feet a minute. The trough is 12 inches wide and eight inches deep, and, when filled with coal six inches deep, loads at the rate of a ton a minute. As the engine or motor is reversible, and the sweep-feed is also reversible, the machine takes coal from the mine floor when moving in either direction, and, once the loading is started, there need be no loss of time except for changing cars. A car holding three tons can be filled in from three to five minutes,

A mine producing 1,000 tons of coal per day under the present system of hand-loading would probably have 200 rooms opened and ready to work, although one-half of this number, or 100 rooms, will produce the same amount of coal if that many men could be relied upon to regularly report for work, each man so reporting to load out his quota of 10 tons per day. Mine statistics show that the average shoveler loads about eight tons per day. At this rate, 120 rooms would be required, besides an extra number of rooms in which the undercutters and drillers and shooters would be working, making in all about 150 rooms for an output of 1,000 tons per day.

In the machine-loading system the number of rooms necessary for this output would be cut down more than one-half; and in many localities the number of rooms required can be reduced two-

for the same output of coal loaded by hand, and proves the moderation of the statement that the number of working places can be reduced one-half.

Aside from the saving in actual cost of loading, there results the following indirect advantages and economies, incident to this reduction of the working territory required for a given output of coal:

It is manifest that in the greatly reduced mine territory which is the logical sequence of the introduction of machine-loading, ventilation will be proportionately reduced in cost; air will also be more easily handled and can more surely be depended upon. In this connection, attention is directed to some facts which are greatly in favor of the use of the machine. The flights of the conveyor gather the coal from the room floor with the least possible breakage and disturbance. They convey the coal

and be confined to a much smaller territory.

The car-puller feature of the machine increases the efficiency of the present gathering locomotive fully 100 per cent, as the machine delivers five or six loaded cars to the room-neck every hour, where now the gathering locomotive gets but one, for which it must travel to the face.

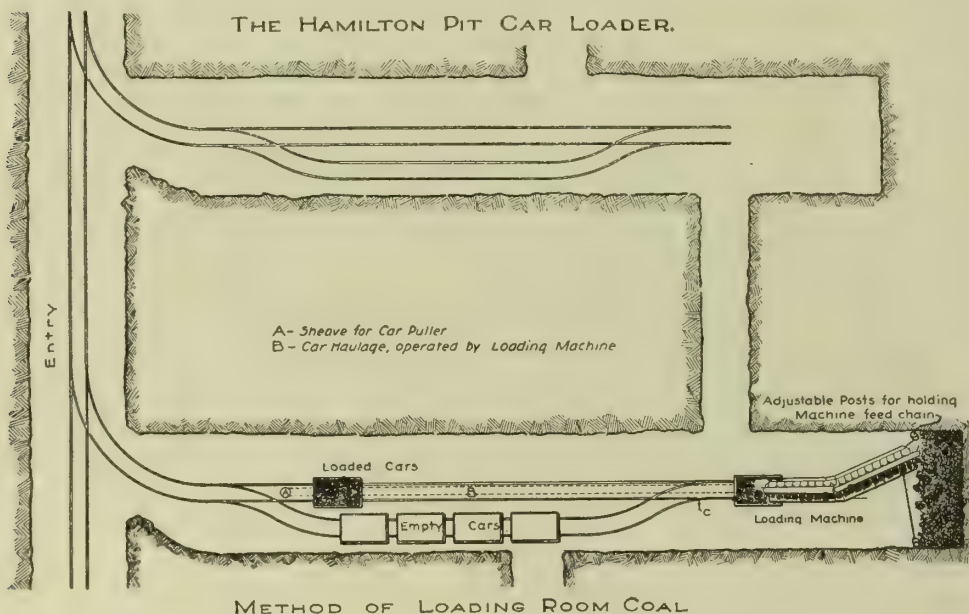
It is stated that this machine will work after any of the undercutters now in use where the roof will permit the props to be set eight feet from the face; that the use of the machines will reduce the cost of producing a ton of coal $33\frac{1}{3}$ per cent; that they will reduce the number of rooms necessary for a given output of coal 50 per cent; that they will reduce the danger from mine explosions more than anything that has been suggested, and will have an elevating influence on the character of the miner, making his work simpler and easier to perform, appealing to his judgment and skill while increasing his earning power, and adding a fascination to the dull work of the mine that the sight of a shovel could never inspire.

AN ALLEGED NEW EXPLOSIVE.

A new explosive has come into use in the western part of the country during the last year, called Trojan powder. It has been tested in climates ranging from Alaska to Panama, and in branches of work that include mining, quarrying, tunneling, railway construction, and irrigating. This powder departs radically in composition, according to the "Engineering Digest," from other explosives in not containing nitro-glycerine, picric acid, gun cotton, chlorate of potash or saltpeter, although it is put up like dynamite and is exploded with the usual detonating cap or exploder. It is said to be stable, to be incapable of freezing, and not to lose its strength when stored for an indefinite time. It is claimed that it may also be transported and handled with safety, as it does not explode on impact or jar. It gives off no noxious fumes, allowing men to return almost immediately after a blast. It is slow and penetrating in action. The makers assert that it is unaffected by heat of the sun, having no ingredient to ooze through the shells, thus becoming a menace to the operator. Stick for stick, it is about 20 per cent lighter in weight than dynamite, and its action is spread over a much larger area.

The United States Government is using this explosive in irrigation projects of the Southwest, and it is employed by railroads throughout the western States.

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thirds from the number needed for hand-loading. For example:

In a seven-foot seam, a 24-foot room, where the coal is undercut by machines to a depth of six feet, will produce about 35 tons of coal for each cutting. This room can be undercut, the coal shot down, mine posts put up and track made ready for the loading machine in about two hours. The loading-machine will move into this room and load out this amount of coal in two hours' time. The machine will then move to another room while No. 1 room is being undercut again the same day, so that 70 tons of coal are obtained from one room in one day. Fifteen such working rooms would give 1,000 tons a day. If to this number is added as many more rooms for a surplus, we would still have only 30 rooms as against 150 rooms for the same output of coal by hand-loading. This is only one-fifth of the number required

into the car at the slow rate of 80 feet per minute, or one-third as fast as a man ordinarily walks. In loading out a room the machine will make less dust than a hand shoveler. The hand-loader, in shoveling up a car of coal, throws the coal from 6 to 10 feet, often throwing it twice, from the corners and sides of the room. The dust arising from each shovelful, as it falls, is more than the machine makes in loading a car. With the machine, at no time does the coal fall more than two or three inches from the end of the delivery conveyor, after the end of the car is once filled.

In the machine-mine the track and timber will be less in first cost, as the machine mine is one-third of the hand-loaded mine. The rooms can be quickly worked out, and track ties, rail and timber be used over again. The undercutting-machines will be benefited, as places to be cut will always be ready for them

The Known Iron Ore Deposits of Brazil

In a recent report to the Bureau of Manufactures at Washington, Consul-General George E. Anderson, of Rio de Janeiro, referred to the vast deposits of iron ore in Brazil. An excerpt from this published in Daily Consular and Trade Reports called forth many inquiries, both to the Bureau of Manufactures and Mr. Anderson, which leads him to write:

Attention was called to certain advance figures concerning known iron ore deposits in Brazil furnished the consul-general by Dr. Orville T. Derby, chief of the geological survey of Brazil, as representing the general conclusions of a memorandum on Brazil's available iron ore supply prepared for use of the International Geological Congress, which is to meet in Stockholm in 1910. This memorandum has been published in Portuguese in connection with the efforts of President Pecanha, of Brazil, to secure the establishing of the iron working industry in this country, though the memorandum was prepared without any regard whatever to such undertaking, having indeed been prepared months before any such undertaking was considered. This official memorandum presents in a striking way a complete outline of the iron working situation in Brazil, and the immense deposits of iron ore of high quality and of unusual accessibility so far as mining is concerned which Brazil now possesses. It is of so much practical importance and interest in the iron world that a translation of it in full is appended. The figures are official, and the memorandum was prepared as a conservative statement for the use of the geological congress in its deliberations. As to the availability of this immense supply of ore for practical work, at present such a question, of course, must be passed upon by transportation and smelting experts, but the matter of the size and general nature of iron deposits is authoritatively disposed of. The memorandum of Doctor Derby is as follows:

The colonial records of Brazil register the fact that about 1590 an exploring party set out from the town of San Paulo, founded about 40 years before, reported the finding of iron ore in a mountain situated about 100 kilometers to the southward. Gold and silver were also reported from the same region; and acting on this information, the Portuguese government took measures to promote the mining industry in the colony by sending out in 1597, officials especially charged with this mission. The inclusion of an iron founder in the party indicates a special interest in the discovery of the iron ore, and one or two small

forges were set up, which commenced to produce iron, probably about the year 1600, and continued in activity to about 1629. The place subsequently took the name of Ipanema, which has ever since been inseparably connected with the long, though not brilliant, history of the iron industry in Brazil. There is a reasonable probability that the iron produced here was the first to be manufactured in the American continent. * * *

Iron ores of good appearance are known in every State of the Brazilian Union and specimens of them figure in every national exposition, but for the most part of the specimens exhibited in expositions and museums and magnetites, and of these the majority of those that have been examined have proved to be quite highly titaniferous. A good number of specimens of hematites of excellent aspect, representing numerous widely separated localities, have also appeared.

Limiting ourselves to the districts regarding which definite information is at hand, it may be said that these belong to the States of Minas Geraes, Sao Paulo, Bahia, Goyaz, Parana, Santa Catharina, Rio Grande do Sul, and Matto Grosso. The ores known in the first three and the last of these states are predominantly hematites; in the others, predominately magnetites.

With a single exception none of these known ore districts have been studied in a way to give the definite information desired for the proposed discussion of the subject of iron ore supply by the International Geological Congress. For the most part our knowledge of them is limited to the mere fact of their existence, their approximate geographical position and the outward aspect of the ore picked up by unskilled observers. These almost invariably report enormous quantities ("whole mountains" is the usual phrase) of most excellent ore, and in many cases it may be presumed that these statements may eventually be proven to have some foundation in fact, but for our present purpose such districts must be left entirely aside.

The above-mentioned exception is the district situated in the eastern central part of the State of Minas Geraes, in the section of the Espinhaco Range that forms the divide between the Rio Doce and the Sao Francisco drainage systems extending over about two degrees of latitude with a width of about one degree of longitude. As already remarked, this is also the most productive of the gold fields of Brazil, and in consequence is one of the oldest and most densely populated of the interior regions of the country. On this account and also on

that of being on the road to the diamond region of northern Minas Geraes, it has been more frequently visited and described by travelers, scientific and otherwise, more than any other interior region. Notwithstanding this fact, however, it has only been very imperfectly mapped and there is a singular lack of reliable and accurate information regarding its geological economic features. This lack is now being supplied by a small party of the Servico Geologico e Mineralogico do Brazil, under the direction of Dr. Luiz Felipe Gonzaga do Campos, that for the two past years has been occupied in mapping the district, both topographically and geologically. Thus far only about one-half of the known iron fields of Brazil has been covered by this work which is of a reconnaissance, rather than of a definite character, though including a somewhat detailed study of some of the most prominent of the ore masses. The following brief account of the district is taken almost exclusively from a preliminary report now in course of preparation by Dr. Gonzaga do Campos.

At present the only all-rail means of access is by the Central Railroad of Brazil, which, starting from the port of Rio de Janeiro, enters the district at its southern border at kilometer 493, traverses it in a north and south direction for a distance of 90 kilometers to Sabara and extends a branch transversely across it which, when completed to Santa Barbara, will have an extension of 60 kilometers. This is government road with a gage of 160 centimeters from 498 kilometers to the station of Miguel Burnier and one meter from that point onward. The Leopoldina Railway, a narrow (one meter) gage road belonging to an English company, starting from the same port, with a present extension of 630 kilometers will eventually tap the district at its northeast corner at Itabira do Matto Dentro with an extension of about 87 kilometers. The Victoria and Diamantina Railroad, also of meter gage and belonging to a French company, is now under construction from the port of Victoria, in the State of Espirito Santo, toward the same point (Itabira). The part of the region that has been mapped with approximate accuracy * * * includes an iron-bearing formation covering an area of about 5,700 square kilometers. The ore field is known to extend to the northward, northeastward, and southward beyond the limits of the map which thus embraces only from a half to two-thirds of its total area.

In its essential geological feature the region is constituted by a basement complex of crystalline schists (igneiss, mica,

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INCREASING CAR EFFICIENCY.

ACCURATE statistics of railroad freight car movement, gathered by a committee of the American Railway Association, show an important improvement in the average movement of freight cars on the railroads of the United States. The reports on car performance lag many months behind the fortnightly reports covering merely the number of cars in and out of service, the latest report on car performance covering the month of April last. A double set of statistics is presented, showing the car movement based upon the entire number of available cars, and similar figures based only on the number of cars in service. The latter statistics show the actual improvement the railroads are making in getting better service out of cars.

While the April statistics do not show up altogether as well as those for March the improvement since December, 1907, is quite pronounced. For the two months the statistics are as follows, excluding surplus cars:

	December, 1907	April, 1909
Miles per day.....	23.9	26.8
Ton-miles per car... 316		371
Earnings per car, day \$2.17		\$2.54

Chairman Hale, of the committee, remarks that the improved movement is equivalent to the addition of 200,000 cars to the equipment of the country.

It has appeared somewhat strange to the layman that the railroads have been getting such a small daily movement out of their cars. Before the collection of

the present statistics was undertaken by the American Railway Association estimates were widely circulated, and generally credited, to the effect that the average car movement was only about 22 miles a day, while the average movement of loaded cars was only about 15 miles per day. Even allowing for the fact that cars frequently lie on shippers' or consignees' yards for periods quite disproportionate to the time they are actually en route, the figures appeared altogether too small. The improvement the statistics show in 16 months is not large, in a way, but it has been pretty steady, and considering the rut into which railroads had gotten, is no doubt very satisfactory. There is no indication that any limit has been reached, or is being approached, the indication rather being that as railroads study their problem more carefully, and additional information is gathered, further and marked improvement can be made.

On the surface it may appear that it is not an unmixed blessing to the iron and steel trade that the railroads should get more use out of their cars, but such narrow views do not fit the conditions. The iron and steel trade is prosperous only when its customers are prosperous. The more cheaply the railroads can conduct their work the more money they will have to spend, and there is much in the way of improvements upon which they can spend money if they have it. Thus the improvement in car movement shown by the statistics cited works out into an increase in earnings per car per day from \$2.17 to \$2.54. That means more money per car, and it means something besides this. The railroads have been getting along with old wooden cars where they could, but every increase in the earning power of a car means an additional incentive to wreck an old wooden car and replace it with a steel car. The steel industry has gotten more tonnage of business from the railroads on account of replacement of wooden by steel cars than on account of the necessity of increasing the total carrying capacity of the equipment.

Again, most of the railroad buying in recent years has been with borrowed money. It is good for the railroads to be able to borrow money, but it is still better for them to be able to make their purchases with money they earn. In the latter case their purchases are apt to be more regular. In the former case their purchases are regulated by the ups and downs of the financial market, and this thing has been the bone of the iron and steel industry. It is largely the wide variations in the rate of railroad buying which made the iron and steel trade a "prince or pauper" industry. If the railroads make more money they will be more regular buyers.

ASTONISHING RECOVERY IN PRODUCTION.

RECOVERY is rather a mild term with which to designate the present movement in pig iron production. We are making pig iron to-day at a rate exceeding 30,000,000 tons a year; the best rate previous to the past few weeks was 28,000,000 tons a year. The use of the word recovery is based not upon the idea of previous rates of production, but upon the thoroughly established practice of the American iron trade to gain in production. To recover after a slack period is not to regain the previous rate of production, but to recover the previous rate of increase. In other words, it has been the custom of the American iron trade to gain in production over large periods, and after a depression not merely to reattain the previous rate, but to make up the ground temporarily lost. To go back only to the recovery after the depression of 1903-4, one may note that prior to 1903 pig iron production had been gaining at the rate of nearly two million tons a year; 1903 showed only a very slight gain over 1902, and 1904 showed an actual recession, but 1905 production did not merely gain a couple million tons over 1903 or 1902; it gained 5,000,000 tons over 1902. To go back farther, 1890 was a "banner" year in pig iron production, but even in the 1893-8 depression as early as 1895 a new record of production was made, and another was made in 1897, while 1898 and 1899 made such enormous gains as to show a good average increase over the whole nine years from 1890 to 1899.

Thus it is only natural that a "recovery" in pig iron production after last year's depression does not mean regaining the 1907 pace, but means reaching a new pace which makes up for the lost ground.

The pace at which production had been increasing in the last active period is shown in the following statistics of production:

1905	22,992,380
1906	25,307,191
1907	25,781,361

Both 1905 and 1906 were years of full production, the constantly increasing capacity being fully utilized. It was not so with 1907, for there was a slump in production in the two closing months of the year. The calendar year production did not represent the rate of production which had been maintained for months; in the 12 consecutive months ended October 31, 1907, production was about 27,150,000 tons, and the rate in October alone was 28,000,000 tons. Thus to reach 25, 26, 27 or even 28 million tons a year was relatively little for the American iron trade to do; its precedents called

for the establishment of a new rate altogether. This it is easily doing this month, for there is no question that pig iron is being made at a rate exceeding 30,000,000 tons a year.

The present, however, is presumably only a transitory period. There is no sign that production is going to stop its gain in the attainment of the 30,000,000 ton rate. Of course there may be backsets at almost any time, but the whole trend of affairs is towards a still greater rate of output in the near future.

The pig iron producing business is divided roughly between the steel works furnaces and the merchant furnaces. As to the steel works branch, it appears that almost all of the old blast furnaces have been put into operation again, leaving little further to be gained in that direction. Of new furnaces, many have been put in blast, but there are others coming in the next few months, not far short of a dozen. There are the three Jones & Laughlin furnaces at Aliquippa, and four additional at Gary, besides several others. The steel industry proper stands ready to add between one million and two million tons to the rate of production, with new furnaces, and prospects are that it will make the addition in the near future.

As to the merchant furnace division, the statistics show that it is behind its rate of production in October, 1907, by about a million tons a year. There are, however, new merchant furnaces, to the extent of over a half million tons annual capacity, completed since 1907, so that the merchant furnace division has room for a further expansion of at least 1,500,000 tons. The foundry industry, the chief customer of the merchant furnaces, has lagged behind the steel industry in showing increased demand. Usually it does, the popular statement being that the foundry industry generally lags six months behind the steel industry in reviving after a depression.

From these figures it might be inferred that there is room, in the near future, for a gain of at least 3,000,000 tons a year in pig iron production over the present 30,000,000-ton rate, to make a rate of 33,000,000 tons. That, however, is probably an extreme estimate, as regards the near future, for the two reasons that October is always a particularly good month for individual furnace records and that in a slack period an abnormally large number of furnaces are relined, so that for a time the industry reaches a greater rate of production than can be maintained when other furnaces begin to play out. Thus it is improbable that the full 33,000,000-ton rate can be attained within the next few months, but there are additional new furnaces to be completed later, and on

the completion of such furnaces the American iron industry will be in the position of being able to make 33,000,000 tons of pig iron a year, year in and year out. This is provided the industry can find all the raw material it needs, and it generally does do this, despite the predictions frequently made in certain quarters of an impending ore or coke famine.

New records in steel production are of course being made also, this being obvious from the fact that the pig iron production by steel works has gained more than has the total pig iron production. It is customary to talk steel ingot statistics in this connection, but they are quite misleading because so much scrap goes back to be reworked, the production of finished steel falling millions of tons a year short of the production of ingots as reported. In 1906 and 1907 finished rolled steel was produced at the rate of about 17½ million tons a year; the current rate shows a gain of about 1½ million tons a year over this. We are probably making finished rolled steel just now at the rate of about 19,000,000 tons a year.

OUR RETROSPECT.

LAKE Superior iron ore shipments did well 20 years ago when the season total reached an amount which is rather short for a single month's movement in these times. Our issue of an even 20 years ago gives the shipments of the four ranges (the Mesaba range not then being opened) to October 8, 1889, as follows:

	Gross tons.
Marquette	2,053,730
Menominee	1,371,295
Gogebic	1,533,600
Vermillion	715,696
Total.....	5,674,321

The prospect was that the total lake shipments for the season 1889 would be 6,250,000 tons. This year both August and September have shown a monthly movement by water of more than 7,000,000 tons, and the season total promises to exceed 42,000 tons.

Pig iron in England 20 years ago was at substantially the present level. Middlesbrough No. 3 is quoted in this issue of 20 years ago at 50s. 9d., while Cleveland warrants at this writing are quoted at 51s. 3d., so that prices are substantially the same. Pig iron prices in the Pittsburgh market show quite a variation. Foundry and Bessemer grades were farther apart than they are now. It is gossip in the trade, anent the fact that Bessemer and foundry iron are farther apart than recently, that "old" spreads must be disregarded, that the market is showing, and is likely to continue to show, greater spreads than formerly.

This is true in a way, but 20 years ago the spread was bigger even than the advanced spread existing at present. Quotations at Pittsburgh under date of October 17, 1889, were as follows:

Neutral mill	\$16.00
All-ore mill	16.50
No. 1 foundry, native ore.....	16.75
No. 1 foundry, lake ore.....	17.50
Bessemer	20.80

Foundry iron was lower, and Bessemer iron higher then, than now. Putting No. 2 foundry 50 cents below No. 1, the spread between foundry, lake ore, and Bessemer was \$3.80; the present spread is not over \$2 at the outside.

Nail prices were lined up differently 20 years ago. We see "cut nails"—the context indicating that iron cut nails are meant,—were at a minimum of \$1.75, steel cut nails selling 20 to 25 cents higher, while wire nails were \$2.40. Nowadays if there is any difference between iron and steel cut nails, it is that iron nails sell at the higher price. Again, wire nails are now at substantially the same price as cut nails; 20 years ago they brought 50 cents a keg more than iron cut nails. The wire nails was then only about three years old as a market commodity.

It took a long time for Youngstown, O., to get a steel plant. There were merchant furnaces there for many years before steel was made, and these merchant furnaces were continually talking about putting up a steel plant. In this issue of 20 years ago a press dispatch from Youngstown is quoted, to the effect that there was to be built in Youngstown "a mammoth steel plant, to cost over \$1,000,000." The first steel plant in Youngstown was built in 1893, and there are three there now.

The steel car wheel, now so much talked of, was not a mere dream 20 years ago, as witness the following industrial item: "The Fowler Steel Car Wheel Company, of Chicago, has completed the erection of its Bookwalter or Robert steel plant. The product will be used in casting wheel blanks to be rolled into solid car wheels."

Spang-Chalfant Extensions.

Improvements aggregating over \$500,000 will be made by the Spang-Chalfant Company, in the borough of Etna, just out of Pittsburgh, as soon as the borough council acts on the company's proposition to change certain street lines. The company plans to extend its plant, raise the adjoining street above the flood level, and build a new machine shop nearby.

Try a Want or For Sale ad in the Industrial World.

Market Conditions, Prices in Producing and Buying Centers

A Cleaned-Up Market In Iron and Semi-Finished Steel.

PITTSBURGH — Anxious buyers, still in the market for pig iron and semi-finished steel, face a cleaned-up market in Pittsburgh district. Eastern steel mills within the past week have been urging Pittsburgh interests to let them have small tonnages of billets and bars, but none of the local manufacturers had any to spare. Fancy premiums have been paid readily for plates and shapes. One small cargo of German billets has been purchased by an Eastern consumer for import, and it is predicted that foreign semi-finished steel may be brought across the Alleghenies before the close of the present rush. And Bessemer iron has reached the famine figure of \$19, with the \$20 mark in sight before November 1.

The iron situation in Pittsburgh district is probably the most serious of all. There is practically no more Bessemer in sight for delivery before the close of the present year. The Bessemer Pig Iron Association is practically sold up to April 1. The \$19 price for prompt Bessemer—a clean advance of \$1 in a week's time—was reached the middle of the week on sales of 7,000 tons to one Pittsburgh district interest, and 5,000 tons to another, both Valley furnaces, at \$19 Valleys for delivery during the present quarter. Both these sales were made by W. P. Snyder & Company. The Bessemer Pig Iron Association sold to the Republic Iron & Steel Company, 20,000 tons for shipment during the first quarter, at \$19, Valleys, following a meeting held in Cleveland the first of the week. This price for 1910 iron could not have been duplicated later in the week. Indeed, the members of the Bessemer Association, after canvassing contracts now on their books, allowed the word to go forth that they had practically no more Bessemer for either last or first quarter.

Meanwhile, there are indications that the big steel companies are not yet out of the woods for their pig iron supply for the present year, notwithstanding the large tonnages bought during August and September. There were rumors during the week that the United States Steel Corporation had re-entered the market for a round tonnage of Bessemer, but these reports were denied. The Steel Corporation, however, could use some iron from the independents, if it could be found and taken up without forcing the market into a hysterical state. That alone, it was said last week, prevented the opening of negotiations.

Basic iron also experienced an active week—despite the fact that even the iron and steel trades were affected somewhat by the baseball dementia that held Pittsburgh in its grip and resulted in a series of half-holidays in offices where usually the most matter-of-fact business rules obtain. The new price of \$17 Valleys, established a week ago, is the absolute minimum for basic iron. The Carbon Steel Company took 8,000 tons at \$17, for last quarter. The West Leetsburg Steel Company took 1,000 tons at \$17, for prompt delivery. Middlemen, who are said to hold considerable tonnages, taken for speculation, are holding for \$17.50, although all hands admit that there is little or no chance of the basic and foundry grades rising on an equal ratio with Bessemer, for stocks are by no means wiped out in these grades. However, one Western and one Eastern buyer were in the market the last of the week for a total of 10,000 tons of basic, for delivery during last and first quarter, and a transaction at Buffalo involving 20,000 tons of basic, taken by a Western concern, came to the ears of Pittsburgh brokers during the week. It is safe to say the minimum on basic will have advanced to \$17.25 by the opening of the week.

Sales in foundry iron were light, though the price was pretty firmly fixed at \$17.25, Valleys, for early delivery, quotations for first quarter of 1910 running \$17.50 to \$17.75. There are large inquiries in the market. The Pennsylvania is asking for 6,000 tons, chiefly for delivery at Altoona, for shop work there. One lot of prompt No. 2 foundry, the latter part of the week, was sold at the top-notch price of \$17.50, but this was special high grade iron, and some brokers as late as Saturday were boasting that they could shave the \$17.25 price. There were additional inquiries for malleable, but not sufficient to disturb the definitely fixed price levels at \$17.50 and \$18 for present and future deliveries, respectively.

The substantial improvement in the rail situation by rail buying, and a renewal of buying of rolling stock, further complicated the situation in the steel mills. The demand for unfinished grades of steel has reached the point where urgent requests for accommodations in billets and bars by Eastern interests are positively refused. Mills that will guarantee deliveries have secured high prices for billets and sheet and tin bars during the week. Bessemer billets sold at \$27 and sheet bars at \$28. The confirmation of the report that a consumer at tide water has bought a small cargo of Ger-

man billets has set Pittsburgh to wondering whether, at the present rate at which demand is distancing production, foreign billets will not be brought west before the close of the winter.

The Carnegie Steel Company has been asked to fix the price on sheet and tin bars for the first quarter of next year, but thus far has not done so. There are predictions that sheet and tin bars for next year may rule as high as \$30. Forging billets are strong at \$29 and \$30, maker's mill. Steel car companies, boiler makers and shipbuilders are specifying much more heavily on plate contracts than at any time since the resumption of business in the steel trade. Orders from scattering railroads for 3,000 cars during the past fortnight have forced the car companies to renewed activity, and contracts are let for nine or ten lake vessels, to be completed next year. The American Bridge Company has been anxious for the past month to put its Ambridge plant on double turn, but has been unable to do so owing to the slow delivery of materials from the rolling mills. On plates, it is predicted the ruling price for the first quarter will be 1.55c, Pittsburgh, and 1.60c, for second quarter.

Rail buying by the Missouri Pacific brought the total new rail orders to the Steel Corporation to 95,000 tons, 42,000 to the Illinois Steel and 53,000 to Carnegie Steel. The Norfolk & Western's 13,000-ton order went to the Carnegie Steel Company; the order from the Missouri Pacific for 30,000 tons, 20,000 of it for open hearth, will be distributed, and the Gary mills will probably be asked to handle a part of the open hearth tonnage, notwithstanding the fact that they were announced as sold up for the remainder of the year. The Carnegie mills booked 3,700 tons of light rails during the week, an unusually high tonnage. The Pennsylvania is in the market for an additional tonnage of tie plates and other track supplies. The New York Central's 250,000-ton rail order has not yet been closed.

There is strong buying of tin plate and for the first quarter, and the American Sheet & Tin Plate Company, with 154 mills on, is running a larger output than is usual for this season. The independents are taking tin plate orders freely to April 1.

The heavier contracts in structural material are all pretty well closed up for the year. Of the 7,800 tons of structural work, mentioned in these columns last week, taken by the McClintic-Marshall Construction Company, of Pittsburgh, for the Michigan Central

terminal at Detroit, about 25,000 tons will be rolled at the Bethlehem mills, and the remainder at the Carnegie plants. The tonnage on this work will be considerably swelled by alterations in the plans now being worked out. The Ft. Pitt Bridge Company has taken 27,000 tons for the Olds bank building, at Spokane, Wash., and the American Bridge Company 1,000 tons for a warehouse for the American Sugar Refining Company, at New Orleans. Pittsburgh fabricators are greatly interested in the lettings for the proposed free bridge over the Mississippi river at St. Louis, the bids for which will be taken about November 1. The specifications call for nickel steel.

The old materials market in Pittsburgh remained rather quiet during the week, though wrought and heavy melting steel scrap brought slightly higher prices. On wrought scrap \$19.50 was asked by many dealers. Steel mills bought heavy steel around \$18.

Peak of the Load Reached in West; No Further Orders for This Year.

CHICAGO — Deferred business will occupy the attention of both combine and independent mills in the West until after the holidays. Steel makers have reached the peak of the load. Practically no orders have been taken during the week just ended for delivery during the remainder of this year. Premiums are offered for billets, bars and plates. The plate mills are more than 10 weeks behind on specifications already on their books, with large allotments from the shipbuilding trade yet to be heard from. At Gary, 19 open hearth furnaces were in operation last week. This capacity cannot be materially increased until the fifth of the new blast furnaces is blown in, sometime toward the last end of the present month.

The steel mills of Chicago district have clearly broken their records for the first half of October—the output running far above the corresponding period of September. In pig iron, also, the buying has halted for the present, consumers feeling that the top notch has been touched in prices for raw metal, and the needs of most of the local consumers being filled for the time being. The Tennessee Coal, Iron & Railroad Company has notified its Northern agents that no further business will be taken at present prices until further notice, and it is understood large tonnages have been taken up by the Tennessee Company for 1910 deliveries on the basis of \$15, Birmingham. One large local machine interest wants 16,000 tons of high silicon and No. 2 foundry, and another Western interest has asked for prices on 7,000 tons

of basic, delivery to begin at once.

With two or three Western roads yet to come into the market with their winter orders for standard rails, the South Chicago and Gary plants have virtually closed their books till after the first of the year. Orders received during the week just ended exceeded 30,000 tons, 20,000 of which was for open hearth, from the Missouri Pacific. This open hearth tonnage probably will go to the Gary mill, if that plant comes up to the expectations of the Steel Corporation managers in the matter of production. On bolts and other track supplies, the local producers are sold out far in advance.

Announcements by the Steel Corporation agents that quotations given on structural shapes at this time are subject to withdrawal without notice tend to confirm the possibility of another advance in the structural material. No large lettings were reported during the week, and the independents took several smaller contracts on which the American Bridge made no effort to land successful bids. The letting of the new St. Louis bridge, on which bids will be taken about November 1, is attracting much attention locally. About 16,300 tons of nickel steel will be required on the contract.

Tonnages of iron pipe aggregating 1,500 tons were taken by the United States Cast Iron Pipe Company, from three Ohio towns. Heavy demand is reported by the merchant pipe interests, in the face of the recent advance in that commodity. In steel bars, a price of 1.50c, Pittsburgh, has been tentatively established on contracts for the first quarter and possibly the first half of 1910, while in iron bars the minimum for any delivery is 1.50c, with sales for immediate shipment reported as high as 1.55c. In old materials, the high price levels established a week ago, have been firmly fixed. The Steel Corporation is still in the market for additional scrap for the Gary plant. One railroad list last week included 3,200 tons of old steel rails.

Buying of Basic Iron; More Eastern Furnaces On.

PHILADELPHIA — Basic iron sales for the week just ended told more than 40,000 tons. There was heavy buying all through the East. In pipe-making grades of iron, the scarcity has been accentuated during the past six days. Two cargoes of foreign iron are now known to have been bought, one for delivery to a pipe making plant near Philadelphia, the other to a New England concern. The Steel Corporation took about 3,000 tons of basic for the Pencoyd Iron works, and is said to be in the market for still more of the same

grade. Other steel making concerns also bought basic to the extent of 18,000 tons. Most of these transactions were on the basis of \$18, delivered, for this year, and \$18.50 for the first quarter of 1910.

Virginia furnaces have little foundry iron to offer. For No. 2X foundry, they are holding firmly at \$16 to \$16.50, furnace, which puts the Virginia product out of competition with the Northern iron at present quoted prices of \$18.50, delivered, for prompt No. 2X. There are threats, too, of an importation of foreign basic iron.

Three furnaces are to be blown in within the next month in the Eastern Pennsylvania district. Marshall, at Newport, and Coleman, at Lebanon, are undergoing repairs, but will be ready to resume soon after the first of the month. There is no question, however, but that the mills have swamped the Eastern furnaces for the remainder of the present year.

Structural lettings were few and insignificant during the week. The scrap market was agitated by the arrival of a shipment of 4,000 tons of foreign crop ends, and considerable foreign steel scrap is expected to be imported within the next 30 days. A large tonnage of domestic scrap was bought at \$18.50, delivered.

Bringing in Middlesbrough Iron; Heavy Buying in the East.

NEW YORK—Heavy inquiries were in the New York market at the close of the week for basic and malleable irons. One pipe making interest has bought a cargo of 4,000 to 5,000 tons of Middlesbrough No. 4 for import, shipped for delivery on the Delaware river. A New England interest also has closed for a small amount of foreign iron. The purchase of a small cargo of German billets by a tidewater steel maker has created considerable comment here.

A New England malleable foundry bought a round tonnage of malleable pig for shipment through the winter and spring. The Pennsylvania Railroad is negotiating for 6,000 to 8,000 tons of foundry iron. One Western consumer took 20,000 tons of basic pig at Buffalo, for shipment by water. Many of the smaller foundries in the East have underestimated their requirements for the present year, and their inquiries swell the total of pending purchases by a round tonnage.

The importers are offering British iron at \$17 at tidewater, duty paid, and there seems little question that considerable of it will find its way to the American mills before the close of the year.

The market on ferroalloys still is firm, manganese being quoted at \$44 at seaboard, and ferro-silicon at \$62 and \$62.50,

New York. Some Western steel concerns are said to be in the market for additional consignments of manganese. There is little change in the situation on semi-finished steel, the Eastern consumers being compelled to get along in hand-to-mouth fashion owing to the inability of the mills to spare any large tonnages.

Two contracts for cast iron pipe, on which the lettings will be made known within a day or two, both in New York, aggregate 8,500 tons. Considerable new structural lettings are announced, notwithstanding the present straitened conditions in the fabricating trade as to deliveries from the mills. About 3,000 tons of new bridge work, awarded by the Norfolk & Western, is divided between the American Bridge Company and the Pennsylvania Steel Company. The American Bridge will furnish 2,500 tons of fabricated work for the government's new building at New Orleans. The Cambria Steel Company will furnish 2,000 tons for a local apartment house, and smaller local contracts, let during the week, aggregated 5,000 tons, most of which went to Bethlehem and other independents.

Birmingham Iron's Minimum \$15; Announcements of Extensions.

BIRMINGHAM — Ruling prices for No. 2 foundry iron remain at \$15 for the first quarter and first half of 1910. All the \$14.50 iron for prompt delivery seems to have disappeared. No effort is apparently being made to send prices for next year any higher. In four months, seven additional stacks have blown in in Birmingham district, and furnace operators are contented to let well enough alone in the matter of prices. Sales during the week just past for next year's delivery are estimated at 15,000 tons. Stocks on the yards continue comparatively low. Low grade iron is very much in demand and still commands a premium. The railroads are alive to the car situation, and are apparently exerting their best efforts to prevent any serious setback to the manufacturers, both as to handling their raw material and pig iron shipments. Charcoal iron is being quoted and sold at \$21 per ton at the furnace.

There has not been a sympathetic rise in the price of cast-iron pipe commensurate with that of the raw pig, but manufacturers look at the situation from the standpoint that it will only be a question of time until such advance must take place. Inquiries continue good, and small lots are sold from time to time. There is no reported curtailment of the product; but, on the other hand, full time is being put in. At present quotations are as follows (f. o. b. cars

at the factory): Four-inch, \$25; 6, 8, and 10-inch, \$23; 12-inch and over, \$22 average, within a dollar advance for gas pipe. Fittings are quoted at \$55 per ton.

Something like 7,000 tons of scrap changed hands the past week, and the feature of the market is the exceptionally good demand at a high level, for No. 1. machinery scrap. One large dealer reports a firm offer for a good round lot at \$12.50 per ton, Birmingham. The offer was rejected and \$13 per ton here demanded. It will be observed that this price is only \$1.50 per ton under the price of regular 4 foundry iron, considering 2 foundry basis. Wrought scrap also is active, commanding \$13.50 and \$14.

The Tennessee Company is preparing to erect at Ensley two additional 100-ton open hearth furnaces. This move is in keeping with the long list of improvements contemplated by the company in this district. Work at present has been temporarily suspended on the improvements at the old puddling mill site at Bessemer, where rail accessories are eventually to be manufactured, the surplus steel product, which was intended for this purpose, being utilized in other departments. Ninety-seven coke ovens have been put in commission at Blocton, and 260 additional ones are being repaired for service as soon as work is completed.

The Trussville furnace of the Southern Iron & Steel Company will go in blast Monday or Tuesday. This is the first furnace of the company to go in, and the Chattanooga furnace is expected to follow reasonably soon.

Ironton Furnaces Out of the Market For Anything Under \$17.

CINCINNATI — Ironton furnaces are out of the market on all offers under \$17 furnace for No. 2 foundry iron. Some sales were reported at \$16.50 the early part of the week, but the more important makers closed out all they wanted to sell at that figure. Some quotations are as high as \$17.50, Ironton. There are large inquiries still in the market. American Harvester is in the market for 30,000 to 40,000 tons of No. 2 and No. 3 for first half of next year. Low grade irons still are scarce. Southern makers are quoting \$13.75, Birmingham, as the minimum on forge iron. An inquiry from St. Louis is for 10,000 to 15,000 tons of basic, for deliveries commencing in November and extending to April 1.

Southern makers are still accepting \$15, Birmingham, for first and second quarters of 1910, there being no disposition just now to force prices up on future deliveries. The \$15 price, however, is the practical minimum at Birmingham even for prompt shipments. For char-

coal irons, prices of \$22, Southern furnace, were named, and one 700-ton order to Pittsburgh territory was closed at that figure.

Machine tool builders are getting further behind in their deliveries. Rogers, Brown & Company, in their special letter from Cincinnati, to the Industrial World, say:

Large purchases of Bessemer iron have practically cleaned up the Bessemer market for prompt delivery and the situation is stronger. Sales in all districts are keeping up well and, with the increased production being taken care of without a hitch, the general situation is even better than heretofore. Consumers of the lower grades are having difficulty in getting the tonnage wanted and have been continuously picking up odd lots as offered.

Specialties are in good demand, ferro-manganese and ferro-silicon both going well and inquiry active for the first quarter and first half of next year.

In finished products the lighter materials are most active, with a very strong condition prevailing throughout the entire industry.

New furnaces continue to blow in, but the greater demands made by consumers are taking care of the product in good shape, with consumption on the increase.

Coke continues strong, with the labor situation very unsatisfactory. The outlook is bad for improvement in this particular. In spite of this, production has slightly increased, but not as much as is really necessary or as manufacturers would like to have. Coke is the keynote of the situation and will make a great difference in manufacture and melt of pig iron unless the production can be improved and some of the regular winter drawbacks discounted.

Gain in Coke Production; New \$3 Prices Are Shaved.

CONNELLSVILLE — With a gain of over 10,000 tons in coke production for the week ending October 9, the operators who have set the mark for next year's coke at \$3 have failed to hold the price firmly at that figure. Some contracts for first quarter and first half have been made at \$3, while other contracts for first half and longer periods have been closed at \$2.90. It seems likely now the \$2.90 price will rule once the trade settles down from its recent hysteria.

On prompt coke, the following actual sales give an index to the situation: 2,000 tons at \$2.75; 2,000 tons at \$2.85; 1,000 tons at \$2.80; 25 cars at \$2.80. Some furnaces are believed to be buying extra tonnages for stock. The pressure for odd lots of prompt coke has decreased.

No contracts have been made at higher than the \$3 limit. The Lackawanna Steel Company is said to have taken 10,000 tons a month for the entire year at that price, while a Pittsburgh furnace interest closed with W. A. Stone for 10,000 tons a month for the entire year at \$2.85. Another contract closed dur-

ing the week calls for 25,000 tons a month for first half at \$2.90. Foundry coke has been very dull, and occasionally sales of prompt are made at prices below what furnace coke could bring. Very little indeed is being done in foundry coke for next year; interest in the market centers almost wholly upon furnace coke.

The Connellsville "Courier" of current issue quotes the market at \$2.75 to \$2.85 for prompt and \$2.90 to \$3 for next year, for furnace coke, and at \$2.60 to \$2.85 for prompt and \$3 to \$3.25 for next year for 72-hour coke.

The production for the week ending October 9 was 437,829 tons with 35,293 ovens in blast, as against 423,819 tons the week preceding, with 34,693 ovens in blast. Shipments aggregated 13,525 cars, compared with 13,858 cars the previous week. An increase in the general number of ovens was a feature, the Thompson-Connellsville Company reporting a total oven list of 800 at its two plants. But these were not all in blast and did not increase the tonnage.

The "Courier," in reviewing the situation for next year, says:

It is figured that outside of long term contracts there has been sold for first half or the whole year not far from 250,000 tons per month. A few of the sales were made in August, before the present level was reached, and a few have been on sliding scale contracts, based on pig iron, but there is little doubt that more than 100,000 tons a month has been sold at flat prices, from \$2.85 up to \$3. There is left to be bought, at the lowest estimate, fully 200,000 tons a month, and if some doubtful customers come in the requirements will be considerably larger. Several, four or five at any rate, of the eastern Pennsylvania and New York steel interests have not covered anything like their entire requirements. The central western steel works are better covered, but there are many merchant furnaces, in Western Pennsylvania, Ohio and farther out, which have not contracted.

England Looks to America.

Speaking of conditions in the Middlesbrough iron trade, the London "Collieries Guardian" says:

Encouraging reports from America, together with better accounts from the Continent, assist materially to strengthen the Cleveland market. Inquiries from the other side of the Atlantic are numerous, but they do not lead to very much business. One cargo of pig iron, however, has been sold to the States, and an order for 3,000 tons of scrap for America has been placed here. Shipments of pig iron for September fall considerably short of what was expected. The most unsatisfactory feature of the market is the continued over-production of pig iron, with the result that stocks are increasing.

From Glasgow the "Collieries Guardian's" report says:

The demand for Scotch pig iron continues good, and almost all the ordinary

qualities have been advanced in price. No. 1 iron is, if anything, in greater request for export, and it is stated that several producers are presently considering the advisability of stopping the manufacture of No. 3 in the meantime, and running only the No. 1 quality. A lot of 1,000 tons of the latter was this week sold for shipment to the Pacific Coast, and inquiries from New York for several other lots, special brands, are at present in the market. Standard foundry iron is still in active demand for export, and some of the lots referred to last week, as being the subject of negotiation, have been fixed up for early shipment. There is little inquiry for home consumption.

Reports from Sheffield say several

good Canadian contracts for crushers and heavy machinery have been booked, while the demand for forgings and castings for general trade, also for tool-steel, files, and engineering tools, is extremely restricted, but there is some indication that the engineering branch is livening up a little. Some fair orders for steel, machinery, and tools from foreign countries are being occasionally booked, and the foreign trade generally is certainly better than the home market. In particular shipments to South Africa are steadily increasing, notwithstanding severe German competition.

A Forty Ton Triplex Chain Block

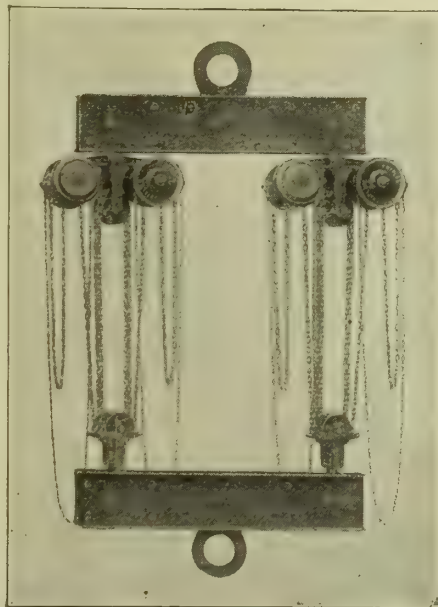
When the ordinary mechanical man thinks of a chain block it is invariably of the smaller capacities ranging from the $\frac{1}{8}$ differential to the 1, 2 or may be 5-ton blocks of higher efficiency. Even engineers who should be hoisting experts, but who are not directly in touch with the latest practice in the use of hand hoists, too often think of chain blocks above 10 tons as something un-

veloped to meet the demands of engineers for a dependable hand hoist to handle very heavy loads where the installation of an electric crane or powerful steam hoist, because of time or cost, would be out of the question.

The 40-ton triplex is composed of two 20-ton units with equalizing bars at top and bottom. This provides for single point suspension and for a single point for attachment of load. The equalizing bars are made of two channels placed back to back with separators. Clevises or points of attachment enable the user to easily put the hoist in place wherever used and also afford a convenient point for the attachment of the load. It will find its greatest fields of usefulness in wrecking work (especially marine); in manufacturing plants, at mines and quarries and in building operations, and generally for loading and unloading.

It may be installed over railroad tracks on a properly guyed temporary or permanent trestle. Lateral motion may be secured by one or more trolleys running on a large "I" beam.

It is available for handling heavy ordnance, etc., where head room, cost, infrequency of lift, or other conditions do not permit the use of power cranes of sufficient capacity. The hand chains are arranged to permit 2, 4 or 8 men to work effectively. Where the load is larger than 40 tons, it is generally of sufficient size to permit two of these hoists to be worked together, giving a capacity of 80 tons.



New 40-Ton Triplex Chain-Block of Yale & Towne Manufacturing Co.

usual; experiments to be tried only when no other means of handling heavy loads can possibly be made available.

The larger sizes of chain blocks are just as available under certain circumstances as the differential is for light loads. The Yale & Towne Manufacturing Company, has regularly for years made its triplex chain blocks up to 20 tons' capacity. The 40-ton triplex illustrated on this page has recently been de-

W. W. Adams, Pittsburgh representative of the Browning Engineering Company, Cleveland, Ohio, has moved his offices into a more commodious suit at No. 311 House building. Mr. Adams will also look after the interests of the company in the Buffalo, N. Y., territory.

Range of Weekly Quotations of Pig Iron

PIG IRON

At Pittsburgh—

At Pittsburgh—	Oct. 16.	Oct. 11	Oct. 4.	Sept 25.	Sept. 18.	Sept. 11.	Sept. 4.
Bessemer	19.90	19.40	18.90	18.90	18.40	17.90	17.65@17.90
Basic	17.90@18.40	17.90@18.40	17.40@17.90	16.90@17.40	16.90@17.40	16.65@16.90	16.40@16.90
No. 1 Foundry	18.65@19.15	18.65@19.15	17.90@18.40	17.40@17.90	17.40@17.90	17.15@17.65	16.90@17.40
No. 2 Foundry	18.15@18.65	18.15@18.65	17.65@17.90	17.15@17.65	17.15@17.40	16.65@16.90	16.40@16.90
Malleable Bessemer	17.90@18.90	17.90@18.15	17.65@18.15	17.15@17.40	17.15@17.40	17.15@17.40	16.65@16.90
Gray Forge	17.15@17.65	17.15@17.65	16.90@17.15	16.65@16.90	15.90@16.15	15.90@16.15	15.65@15.90
Low Phosphorus	21.00@21.90	21.00@21.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90
Ferro Silicon, 50 per cent	64.00@66.00	64.00@66.00	64.00@66.00	64.00@66.00	64.00@66.00	64.00@66.00	64.00@66.00
Ferro Silicon, 10 per cent	25.00@25.50	25.00@25.50	25.00@25.50	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00
Silicon Spiegel, 10 to 12 per cent ..	26.00@28.00	26.00@28.00	26.00@28.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00
Spiegeleisen	25.50@30.00	25.50@30.00	25.50@30.00	25.50@30.00	25.50@30.00	29.50@30.00	29.50@30.00
Ferro Manganese	34.45@47.45	45.45@47.45	44.95@46.95	45.95@46.95	44.45@46.45	44.45@45.45	43.95@44.95

At Virginia Furnaces—

Basic	16.00@17.00	16.00@17.00	16.00@17.00	16.50@17.00	16.00@16.50	15.50@16.50	15.50@16.50
No. 1 X	17.00@18.00	17.00@18.00	17.00@18.00	17.00	16.50@17.00	16.50@17.00	16.50@17.00
No. 2 X	16.50	16.50	16.50@17.50	16.50	16.00	15.50@16.00	15.50@16.00
No. 2 Plain	16.00@16.25	16.00@16.25	16.00@16.25	16.00@16.25	15.50@15.75	15.00	15.00
Gray Forge	15.50@15.75	15.50@15.75	15.50@15.75	15.50@15.75	15.00@15.25	14.50@15.00	14.50@15.00

At Birmingham—

No. 1, Foundry	15.00@15.50	15.00@15.50	15.00@15.50	15.00	14.50	14.50	14.00
No. 2, Soft	15.00	15.00	14.50@15.00	14.00@14.50	14.00@14.50	14.00	13.50@14.00
No. 2, Foundry	15.00	15.00	14.50@15.00	14.50	14.00@14.50	14.00	13.50@14.00
No. 3, Foundry	14.00@14.50	14.00@14.50	14.00@14.50	13.50@14.00	13.00@13.50	13.00@13.50	12.50@13.50
No. 4, Foundry	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.00@11.50
Gray Forge	14.00@15.00	14.00@15.00	13.50@14.50	13.00@14.00	13.00@14.00	13.00@14.00	12.00@13.50

At Philadelphia—

No. 2X Foundry	18.50@19.00	18.50@19.00	18.50@18.75	18.00@18.50	18.00@18.50	17.75@18.25	17.50@18.00
Basic	18.00@18.75	18.00@18.75	18.00@18.75	18.00@18.75	18.00@18.75	18.00@18.50	18.00
Gray Forge	17.00@17.50	17.00@17.50	17.00@17.50	17.00@17.50	16.75@17.25	16.75@17.25	16.50@16.75

STEEL.

Tons of 2,240 lbs., at Pittsburgh—

Bessemer Billets	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	25.00@25.50	25.00@25.50
Open Hearth Billets	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00
Forging Billets	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00
Sheet and Tin Bars	28.00@30.00	27.00	27.00	27.00	27.00	26.00@27.00	25.50@26.00
Bessemer Steel Rails	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Open-Hearth Steel Rails	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Light Steel Rails—							
25 to 45 lbs.	28.00	28.00	28.00	28.00	28.00	28.00	28.00
16 and 20 lbs.	29.00	29.00	29.00	29.00	29.00	29.00	29.00
12 and 14 lbs.	30.00	30.00	30.00	30.00	30.00	30.00	30.00
8 lbs.	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Bessemer Wire Rods	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Open-Hearth Wire Rods	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Muck Bar, all pig iron	28.00	27.00	27.00	27.00	27.00	27.00	27.00

FINISHED PRODUCTS.

Tons of 2,000 lbs., at Pittsburgh-

	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00
Sklsp Steel Grooved	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00
Sklsp Steel Sheared	34.00	34.00	34.00	34.00	34.00	32.00@33.00	32.00@33.00
Railroad Spikes	45.00@46.00	45.00@46.00	45.00@46.00	44.00@45.00	44.00	44.00	44.00
Sheets, No. 28	67.00@68.00	67.00@68.00	67.00@68.00	65.00@67.00	65.00	65.00	65.00
Galvanized Sheets, No. 28	30.00	30.00	30.00	30.00	30.00	28.00@29.00	28.00@29.00
Beams, 3 to 15 inches	31.00	31.00	31.00	31.00	31.00	30.00@31.00	30.00@31.00
Beams, over 15 inches	30.00	30.00	30.00	30.00	30.00	28.00@29.00	28.00@29.00
Channels, 3 to 15 inches	31.00	31.00	31.00	31.00	31.00	30.00@31.00	30.00@31.00
Channels, over 15 inches	30.00	30.00	30.00	30.00	30.00	29.00@30.00	29.00@30.00
Tees, 3-inch and larger	31.00	31.00	31.00	31.00	31.00	29.00@30.00	29.00@30.00
Zees, 3-inch and larger	30.00	30.00	30.00	30.00	30.00	28.00@29.00	28.00@29.00
Angles, 3 to 6 inches	31.00	31.00	31.00	31.00	31.00	30.00@31.00	30.00@31.00
Angles, over 6 inches	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00
Tank Plate	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Boiler Plate	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Hoops	24.00	24.00	24.00	24.00	24.00	24.00	24.00
Bands	29.00	29.00	29.00	28.00	28.00	27.00@28.00	27.00@28.00
Bessemer Steel Bars	29.00@30.00	29.00@30.00	29.00@30.00	28.00	28.00	27.00@28.00	27.00@28.00
Open-Hearth Steel Bars	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Common Iron Bars							

and Various Finished Iron and Steel Products.

Aug. 21.	Aug. 21.	Aug. 14.	Aug. 7.	July 31.	July 24	July 17.	July 12	July 5.	1908 Oct. 17.
17.40@17.65	16.90@17.40	16.90	16.90	16.40@16.90	16.40@16.90	16.40	16.15@16.40	16.40@16.65	15.90
16.40@16.90	16.15@16.40	16.15@16.40	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	14.90@15.15
16.90@17.40	16.90@17.15	16.90@17.15	16.90@17.15	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	16.40@16.65	15.75@15.90
16.40@17.15	16.15@16.65	16.15@16.65	16.15@16.65	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	15.25@15.40
16.65@16.90	16.40@16.65	16.40@16.65	16.15@16.40	15.90@16.15	15.90@16.15	15.90@16.15	15.90@16.15	16.15@16.40	15.40
15.65@15.90	15.15@15.65	15.15@15.65	15.40@16.15	14.90	14.90	14.90	14.65@14.90	14.90@15.15	14.40
20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90	21.25@21.75
64.00@66.00	64.00@66.00	63.50@65.00	67.00@68.00	67.00@68.00	62.00@63.00	62.00@63.00	63.00@64.00	63.00@64.00	65.00@66.00
24.00@25.00	24.00@25.00	24.00@25.00	23.50@24.50	23.50@24.50	24.00	24.00	24.00	24.00	25.00@26.00
25.00@27.00	25.00@27.00	25.00@27.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	35.50@34.00
29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	29.50@30.00	30.00@30.50
43.95@44.95	43.45@44.45	42.95@43.95	43.45@43.95	43.45@43.95	43.45@43.95	43.45@43.95	42.95@43.95	42.95@43.95	46.00@47.00
14.50@15.50	14.25@14.75	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	13.75@14.25
15.00@15.50	15.00@15.50	14.50@15.00	14.50@15.00	14.50@15.00	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	14.25@14.75
15.00	14.50@15.00	14.00@14.50	14.00@14.50	14.00@14.50	14.00	14.00	13.75@14.00	13.75@14.00	13.75@14.25
14.00@14.50	13.75@14.50	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75	13.25@13.75
14.00@14.75	13.00@13.50	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.75@13.00	12.25@12.75
14.00	13.50@14.00	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	13.00@13.50
13.50@14.00	13.50	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00	13.00@13.50
13.50@14.00	13.50	13.00@13.50	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00	12.50@13.00
12.50@13.50	12.00@13.00	12.00@12.50	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.50@12.00	11.00@11.50	12.00@12.50
11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	11.00@11.50	10.50@11.00	11.50@12.00
12.00@13.50	11.25@11.75	11.25@11.75	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.50@10.75	10.75@11.25
17.00@17.50	17.00@17.50	17.00@17.50	16.50@17.00	16.50@17.00	16.00@16.50	16.00@16.50	16.50@16.75	16.50@16.75	16.75@17.00
17.00@17.50	17.00@17.50	17.00@17.50	15.50@15.75	15.50@15.75	15.50@15.75	15.50	15.50	15.50	15.75@16.00
16.00@16.50	16.00@16.50	16.00@16.50	15.25	15.25	15.25	15.25@15.50	15.25@15.50	15.25@15.50	15.50@15.75

24.00	24.00	24.00	24.00	24.00	23.00@24.00	23.00	23.00	23.00	25.00
26.00	26.00	26.00	26.00	26.00	25.00@26.00	24.00@25.00	24.00@25.00	23.50@24.00	25.00
28.00	28.00	28.00	28.00	28.00	28.00	26.00@28.00	25.00@27.00	25.00	27.00
25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	27.50
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.00
28.00	28.00	28.00	28.00	27.00	27.00	27.00	25.50@27.00	25.50@27.00	23.00@25.00
29.00	29.00	29.00	28.00	27.00@28.00	27.00@28.00	27.00@28.00	26.50@27.00	26.50@27.00	24.00@26.00
30.00	30.00	30.00	30.00	29.00	29.00	29.00	27.75@28.75	27.75@28.75	27.00@28.00
31.00	31.00	31.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00	29.00	31.00@32.00
31.00	31.00	31.00	31.00	31.00	31.00	29.00@30.00	29.00	29.00	33.00
31.00	31.00	31.00	31.00	31.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	34.00
27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	25.00

26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	29.00@30.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	30.00@32.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	34.00@36.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	50.00
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	71.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	32.00
30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	34.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	32.00
30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	34.00
29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00	33.00
29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00	32.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00	32.00
30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	34.00
28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	32.00
30.00	30.00	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00	34.00
30.00	30.00	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@30.00	36.00
24.00	24.00	24.00	24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	24.00	28.00
27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	28.00
27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	24.00@25.00	28.00
30.00	30.00	29.00	29.00	29.00	29.00	29.00	28.00@29.00	29.00	28.00

STEEL PLATES.

Base prices, tank quality, ¼-in. thick, per 100 lbs., f. o. b., Pittsburgh:

6¼ to 100 inches wide\$1.50

Extras over base price—

3-16 inch thick10

Gauges 7 and 815

Gauge 925

Gauges 10 and 1125

Circles20

Sketches10

Boiler and Flange quality10

Marine Steel 40

Widths over 100, to 110 in05

Widths over 110, to 115 in10

Widths over 115, to 120 in15

Widths over 120, to 125 in25

Widths over 125, to 130 in50

Widths over 130 in 1.00

IRON AND STEEL SCRAP.

Old steel rails, re-rolling..\$18.50 \$18.75

Old steel rails, remelting.. 17.75 \$18.50

Steel axles 21.50 22.00

Heavy melting scrap 17.50 18.00

Low phosphorus 21.50 22.00

Sheet scrap 15.25 15.75

No. 1 wrought scrap 19.00 19.50

Machine shop turnings ... 13.00 13.50

Cast borings 11.00 11.50

No. 1 cast 16.50 17.00

Old car wheels 18.75 19.00

Old iron rails 18.50 19.00

Axle turnings 14.00 14.50

Railway malleable 17.00 17.50

TIN AND TERNE PLATES.

Official prices, f. o. b., Pittsburgh—
Coke tins:

14x20, I. C.\$3.65

14x20, 100 lbs. 3.50

14x20 95 lbs. 3.45

14x20, 90 lbs. 3.40

Charcoal tins:

A. Grade, 14x20, I. C. 4.15

A. Grade, 14x20, 100 lbs. 4.00

Ternes:

20x28, I. C. 6.80

20x28, 200 lbs. 6.50

STEEL RAILS.

Fifty pounds and Heavier—

500-ton lots and over\$28.00

Car load lots 30.00

Less than car load lots 32.00

Light Rails—

12 and 14 pounds\$30.00

16, 20 and 25 pounds 28.00

30 and 35 pounds 28.00

40 and 45 pounds 28.00

Relaying Rails

Subject to inspection, f. o. b. Pitts-

burgh:

Stand't 50 lbs. & heavier..\$23.00 \$23.50

25 to 40 lbs. 24.00 24.50

16 to 20-pound rails 24.50 25.50

12-pound rails 26.00 27.00

STEEL SHEETS.

Official prices, per 100 lbs., f. o. b.,
Pittsburgh—
Guage.

Black. Galv.

30\$2.35 \$3.55

29 2.30 3.45

28 2.30 3.35

27 2.25 3.15

25-26 2.20 2.95

22-24 2.15 2.75

17-21 2.10 2.60

15-16 2.05 2.50

13-14 2.00 2.40

Blue Annealed.

10 and heavier\$1.70

11-12 1.75

13-14 1.80

15-16 1.90

Corrugated Roofing.

Per square, 28 gauge, f. o. b. Pitts-

burgh—

Painted\$1.55

Galvanized 2.80

WIRE AND NAILS.

Prices to jobbers in car load lots, per
100 lbs.; retailers 5 cents additional:

Wire nails\$1.80

Plain wire 1.60

Painted barb wire 1.80

Galvanized wire 2.10

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per
cent pure are held at 24c per pound in
ton lots.

For small lots of 100 pounds and over
advances of 3c per pound are charged.

Rods and wirebase price 31 cents

Sheetsbase price 33 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

Per Ton.

Mine-run\$1.10@1.20

¾-inch lump 1.20@1.30

1¼-inch lump 1.30@1.40

3-inch lump 1.55@1.65

1¼-inch nut 1.10@1.20

¾-inch slack55@ .65

At Buffalo—

Pgh. Frep't

Mine-run\$2.35 2.05

¾-inch lump 2.45 2.15

1¼-inch lump 2.55 2.25

¾-inch slack 1.85 1.70

At Cleveland—

Pgh. No. 8

Mine-run\$2.10 \$1.80

¾-inch lump 2.20 1.90

1¼-inch lump 2.25 2.00

1¼-inch nut 2.10 1.80

¾-inch slack 1.55 1.45

At Detroit—

Mine-run\$2.50 \$2.05

¾-inch lump 2.60 2.15

1¼-inch lump 2.70 2.25

1¼-inch nut 2.50 2.05

¾-inch slack 2.00 1.65

At Chicago—

Mine-run\$3.00 \$2.55

¾-inch lump 3.10 2.65

1¼-inch lump 3.20 2.75

1¼-inch nut 3.00 2.55

¾-inch slack 2.45 2.25

MERCHANT PIPE.

Base discounts, car load lots, subject
to one point and 5 per cent extra to
large jobbers.

Steel
Black. Galv

¾ and ¾-inch71 55

¾-inch72 58

½-inch75 63

¾ to 6-inch70 69

7 to 12-inch74 59

Extra strong plain ends—

¾ to ¾-inch64 52

½ to 4-inch71 59

4½ to 8-inch67 55

Double extra strong—

½ to 8-inch60 49

WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe
car load prices to consumers; prices to
jobbers one point and 5 per cent.

¾-inch66

¾ and ¾-inch67 53

½-inch70 58

¾ to 6-inch74 64

7 to 12-inch69 52

Extra Strong and Plain Ends—

¾, ¾ and ¾-inch59 47

½ to 4-inch inclusive56 54

4½ to 8-inch, inclusive62 50

Double Extra Heavy plain Ends—

½ to 8-inch, inclusive55 44

BOILER TUBES.

Steel Iron

1 to 1½ inches49 43

1¾ to 2¼ inches61 43

2½ inches63 48

3¾ to 5 inches69 55

6 to 13 inches60 43

Less than car load lots, two points less.

2½ inches and smaller, over 18 feet, 10
per cent, net extra.

2¾ inches and larger, over 22 feet, 10
per cent net extra.

MERCHANT STEEL.

Cold rolled and ground shafting, 60
per cent off, car load lots; 56 per cent
off less than car load lots; delivered in
base territory:

Planished Tire Steel\$1.40@1.50

Iron finish, up to 1½x½ in. .. 1.35@1.45

Iron finish, 1½x½ in. and over 1.20@1.30

Toe Calk Steel 1.70@1.80

Railway Spring Steel 1.75@1.85

Cutter Shoe 1.95@2.05

Flat Sleigh Shoe 1.55@1.65

Crucible Tool Steel 7.00@8.00

Open-Hearth Spring Steel .. 2.05@2.30

Freight Rates On Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig Iron, from Virginia furnaces to Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	\$2.35	\$3.60	\$3.20	\$2.35	\$3.30	\$3.35
Bristol		3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.35	3.60	3.20	3.00	3.95	4.00
Kayula, Ivanhoe, Rural Retreat ...	2.90	2.35	3.60	3.20	3.40	4.35
Pulaski, E. Radford, Max Meadows. 2.90	2.35	3.60	3.20	3.25	4.20	4.25

Pig Iron from Birmingham, Ala., tons of 2,240 lbs. to—	Cleveland	1.65
Boston, by water	Columbus	1.65
Chicago	Cincinnati	2.10
Cincinnati and Ohio River	Chicago	2.25 2.65
Cleveland	East St. Louis	2.80
Milwaukee and Northwest	Hamilton, Ont.	2.20
New York, all rail	Joliet	2.65
New York, rail and water	Louisville	2.65
Philadelphia, all rail	New York	2.85
Philadelphia, rail and water	Pittsburgh .....	.75 .80
Pittsburgh	Philadelphia	2.15
St. Louis	Richmond, Va.	2.95
	Toledo	1.85 2.10
	Valley Furnaces	1.35
	Milwaukee	2.55
	Detroit	2.00 2.25

To Pittsburgh from—	
Dunbar Furnaces .....	.85
Kittanning Furnaces .....	.60
Scottdale Furnaces .....	.85
Valley Furnaces .....	.90
Wheeling .....	.90
Valley Furnaces to—	
Cleveland .....	.90

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	Billets.
Baltimore	\$2.15	\$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville .....	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va. ....	.90	1.00
Youngstown .....	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango Valleys ..	1.00	
Wheeling	1.00	

COKE.

From Connellsville region, per 2,000 pounds to—	
Buffalo	Fdry. \$1.65 Fdry. \$1.90
Baltimore	2.15

FINISHED PRODUCTS.

Finished Steel Products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire, nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—	
Albany .....	.16
Buffalo .....	.11
Boston .....	.18
Baltimore .....	.14½
Canandaigua .....	.13½
Cleveland .....	.10
Columbus .....	.12
Cincinnati .....	.15
Chicago .....	.18
Harrisburg .....	.14½
Louisville .....	.18
New York .....	.16
Norfolk .....	.20
Philadelphia .....	.15
Rochester .....	.11½
Richmond .....	.20
Scranton .....	.15
St. Louis .....	.23
Washington .....	.14½
To Pittsburgh from—	
Mahoning and Shenango Valleys..	.05
Wheeling .....	.05

COAL.

Coal Rates from Mines—	
To Ashtabula	\$1.00
To Allegheny, Pan'dle Ft. W. trk...	.43
To Allegheny, West Penn tracks..	.48
To Allegheny, B. & O. ....	.35
To Pittsburgh, P. R. R. Main Line..	.43
To Pittsburgh, B. & A. V. Div...	.48
To Pittsburgh, B. & O. ....	.33
To Valleys .....	.70
To Buffalo	1.25
To Cleveland	1.00
To Detroit	1.40
To Chicago	1.90
To New York, gross ton	2.25
To Philadelphia, gross ton	2.00

From Freeport—	
To Buffalo	1.10
For Lake Shipments— Cargo. Fuel.	
To Ashtabula .....	.88 .98
To Cleveland .....	.88 .98
To Erie .....	.88 .98

West Virginia rates from mines—	
To Chicago	1.90
To seaboard points, gross ton	1.80

From No. 8, of Ohio—	
To Cleveland .....	.90
To Chicago	1.65
To Detroit	1.15

TIN PLATE.

	C.L.	L.C.L.
Per 100 lbs., Pittsburgh to—		
Boston, Mass	18	21
Albany, N. Y.	16	19
Baltimore, Md.	14½	17½
Birmingham, Ala.	41	68
Cleveland, O.	10	13
Columbus, O.	12	15
Cincinnati, O.	15	18
Concord, N. H.	18	21
Charlotte, N. C.	39	61
Charleston, S. C.	33	70
Charleston, rail and water..	23½	31
Covington, Ky.	15	18
Chattanooga, Tenn	33	65
Chicago, Ill.	18	21
Canadaigua, N. Y.	13½	16
Des Moines, Ia.	37½	48½
Detroit, Mich	15	18
Denver, Mich	84	1.18
Dover, Del.	17	20
Buffalo, N. Y.	11	13
East St. Louis	22½	26
Hartford, Conn.	18	21
Indianapolis, Ind.	17	19½
Louisville, Ky.	18	21
Montpelier, Vt.	21	24
Minneapolis, Minn.	32	42
New York	16	19
Norfolk, Va.	20	24
Natchez, Miss.	32	61
Portland, Me.	18	21
Providence, R. I.	18	21
Philadelphia, Pa.	15	18
Richmond, Va.	20	24
Rochester, N. Y.	11½	13½
Syracuse, N. Y.	13½	16
St. Louis, Mo.	22½	26
Terre Haute, Ind.	18	21
Topeka, Kas.	54½	68
Trenton, N. J.	16	19

Motor Car Possible Solution To the Electrification Question

GASOLINE MACHINE TRIED OUT ON LACKAWANNA, AND WILL BE SUBJECTED TO TESTS AT OTHER POINTS IN THE EAST. PENNSY INTERESTED.

Motor cars as a possible solution to the smoke problem in handling suburban traffic have been tried out on no less than three different roads in the East during the past week. Railroad managers say the tests have been satisfactory.

The railroad managers are slow to take up the motor car idea because of doubt as to whether it has so far met all the requirements of those who are the pioneers in such improvement. Also, owing to the tremendous investment that must be incurred, which, in some instances, has been declared prohibitive, with corresponding reductions for a time in dividends, notably in Chicago, where the railroads have just locked horns with the city authorities in a battle that may become historic before it is finished.

The idea of operating motor cars has been strongly advocated for a number of years. One of the first to be developed is the Strang gas-electric. It is still a subject of practical test and demonstration, the men behind it appearing to me in no haste to exploit it commercially beyond that stage, and so attempting nothing in the way of manufacturing and filling orders at a plant established in New Jersey. Thus far they seem to be contented with the building of four cars with which to show what they are capable of doing.

One of this quartet of cars is now in the East. It is receiving much close attention from both mechanical and engineering experts. Leaving St. Louis on September 26, it came through to New York under its own power, frequently making from 55 to 67 miles an hour on a level stretch of track, free from sharp curves. Stops were made at Chicago, Detroit, Buffalo and Scranton.

In view of the clash in Chicago between the railroads and the authorities over the smoke nuisance, and the subject of electrification, it is interesting to note that all the parties to this contest hastened to see the Strang car.

During the week tests were made by the Pennsylvania on the Smyrna branch of its Delaware division of a gasoline motor car built by the Sheffield Car Company, of Three Rivers, Mich. They were conducted by James Milliken, superintendent of motive power of the Philadelphia, Baltimore & Washington

division. The car made the trip from Michigan under its own power.

Interest centered, however, in the much-heralded tests of the Strang car on the Lackawanna. The motor was given a run to Newton via Morristown and back over the main line, for the benefit of W. H. Truesdale, president of the railroad company. The car rode with marked steadiness, even when traveling at a high rate of speed, one stretch of seven miles being covered at the rate of 55 miles an hour.

The car, it is claimed, is available, also, as a wrecking car when the overhead or third-rail system has been injured or destroyed; it can be equipped with hoisting apparatus, electric searchlight, fire pumps, etc., and is capable of carrying its own power house and repair shop to the wreck. The principal criticism thus far is that the car is available only for light loads.

NEW CAR VENTILATOR.

Burlington Official Perfects Device to Eliminate Screens.

It is announced that Thomas H. Garland, general agent of the Burlington's refrigerator service, has perfected a system of ventilation for sleeping cars, which will make the use of window screens unnecessary.

It provides for extending a duct from the roof of the car down the side and opening into the car near the level of the lower berth through a grill. Within the grill is a damper, enabling the passenger to shut off the flow of air or turn it on as he wishes. The change of air is brought about by a suction created by ventilators placed on the roof of the car, fitted against the car monitor and having connection with the interior of the car through the openings ordinarily fitted with the deck sash. The operation is on the aspirator or injector principle, creating ventilation by withdrawing the ventilated air from the interior and exhausting it to the outer atmosphere.

Large openings in the ventilators face toward either end of the car, and these form the ducts through which the air is given its application to the exhaustion. The motion of the car forces air into one opening or the other, according to the direction in which the car is moving, and a right angle bend in the duct conveys the air outward and away, leaving the ventilator by openings at the outer edge of the roof. In going through this right-angle portion of the duct, the air moves through the opening of the

passage into the interior of the car, and thus creates a suction toward the outside, which draws air from the interior.

Experiments which have been made to test the efficiency of the suction show that at a speed of 30 miles per hour each ventilator takes out of the car 15,000 cubic feet of air per hour, or 10 ventilators, the average number on a car take out 150,000 cubic feet. At a speed of 60 miles per hour the air is exhausted at the rate of 360,000 cubic feet per hour, changing the entire air of the car in from one to three minutes, according to the rate at which the car is moving.

The Pullman company has already adopted the system, for more than 4,000 cars, while the Burlington, Rock Island, Chesapeake & Ohio, New Haven, New York Central, Chicago Northwestern, Alton, Santa Fe, Illinois Central, and many other lines have made extensive applications.

NEW TROLLEY WRINKLES.

Extensive Exhibit for Steel Railway Men in Denver.

In connection with this month's meeting of the Electric Railway Engineers in Denver, there was a splendid exhibit of electric-railway apparatus by the members of the Manufacturers' Association. The entire floor space and gallery was filled. Probably the most conspicuous exhibits are made by the Allis-Chalmers Company, the General Electric Company and the Westinghouse Electric & Manufacturing Company, the latter's exhibit of the multiple electropneumatic brake system being the most unique and comprehensive ever assembled.

Other notable exhibits were those of the Western Electric Company, D. & W. Fuse Company, American Steel & Wire Company, Crouse-Hinds Company, Dearborn Drug & Chemical Works, G. M. Gest, H. W. Johns-Manville Company, Massachusetts Chemical Company, National Carbon Company, Ohio Brass Company, John A. Roebling's Sons Company, Rail Joint Company, Speer Carbon Company, Stromberg-Carlson Telephone Manufacturing Company, and Wagner Electric Manufacturing Company.

Electrification in Australia.

The New South Wales Railway Commissioners, it is reported, have decided to electrify the remaining 43½ miles of suburban steam lines running out of Sydney. A total of 146 miles of single track have been electrified during the last nine years.

In Market for Trolley Equipment.

The following electric railways will be in the market before long for track material, line construction, power house

machinery, substation apparatus and car equipment; The Tum Tum Mt. Railway, Vancouver, Wash.; Mt. Pleasant, Donegal & Somerset Electric Railway, Connelville, Pa.; Sonoma & Lake County Railroad, Santa Rosa, Cal.; Oakland & Tidewater Railway, Portland, Ore., and the Des Moines & Sioux City Railway.

Car Lighting Engineers.

The annual convention of the Association of Car Lighting Engineers was called to order at the La Salle hotel, Chicago, Monday, October 4, 1909. The secretary reported a satisfactory condition of the finances of the organization, and a total membership of 300.

Following are the officers for the coming year: President, E. M. Cutting, engineer train lighting, heating and ventilation, Southern Pacific Company, Oakland, Cal.; first vice president, J. R. Sloan, electrical engineer, Pennsylvania Railroad, Altoona, Pa.; second vice president, F. R. Frost, electrical engineer, Atchison, Topeka & Santa Fe Railway, Topeka, Kan.; secretary, George B. Colgrove, chief electrician mechanical department, Illinois Central Railroad, Chicago; executive committee, G. W. Murray, chief electrician, San Pedro, Los Angeles & Salt Lake Railroad, Los Angeles, Cal.; O. W. Ott, chief draftsman motive power and machinery, Oregon Short Line, Salt Lake City, Utah; C. R. Gilman, chief electrician, Chicago, Milwaukee & St. Paul Railway, Milwaukee, Wis.; D. J. Cartwright, electrical engineer, Lehigh Valley Railroad, Easton, Pa.; H. C. Meloy, chief electrician, Lake Shore & Michigan Southern Railway, Cleveland, Ohio; A. J. Farrelly, electrical engineer, Chicago & Northwestern Railway, Chicago.

Telephones on Freight Cabooses.

The Atchison, Topeka & Santa Fe will equip all of its freight cabooses with telephone instruments. When a freight is left on a siding some distance from a telegraph office or there is an accident on the main line that should be reported immediately, the trainmen will make connection with the telegraph wires by means of an extension pole carried in the caboose and arranged in joints.

Illinois Central Electrification.

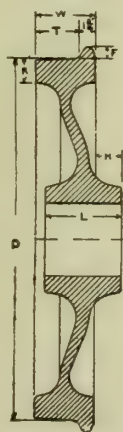
J. T. Harahan, president of the Illinois Central, will recommend at the annual meeting, the electrification of two-track suburban service from Randolph to Sixty-seventh street, Chicago. The official estimate of the cost is \$550,000. The company will buy the power and possibly use coke on other locomotives. The general electrification can wait a few years, but it is necessary to conciliate public sentiment.

ROLLED STEEL WHEEL.

Standard Is Demanded by the Electrical Railway Engineers.

At the recent convention of the American Steel & Interurban Railway Engineering Association, at Denver, L. L. Smith, chairman of the committee on equipment, submitted the following report on the proposed standard for rolled steel wheels, which was adopted:

The demand for standardization of rolled steel wheels has been manifest for some time, and now that their use is becoming so general, the necessity of some sort of standards becomes more and more urgent. Manufacturers of rolled steel wheels state that a large number of designs come in, which require large expenditures for dies and rolls. If the number of designs and sizes could be reduced it would enable the manufacturers to avoid equipping with a multiplicity of dies, and what perhaps is even a more important feature, the use of a limited number of standards would obviate the necessity of frequent changes of dies in running out small orders. It can readily be



ROLLED STEEL WHEELS				
PROPOSED STANDARD SIZES				
D	T	R	H	L
33"	24"±3"	2½"	1½"-2"	5½"
34"	24½"-3"	3"		6"
35"	3'±3½"	3"		6"
36"	3'±3½"	2½"		6"
37"	3'±3½"	3"		6"

BALANCE OF TREAD WITH TREAD WIDTH AND FLANGE HEIGHT		
T	W	F
2½"	3½"	2"
3"	4½"	2½"
3½"	5½"	3"

Rolled Steel Wheels Recommended as Standard by American Steel and Interurban Railway Engineers.

seen that a continuous day's run on one size and style of wheel means the maximum output and minimum cost of production; but if, after running out a few wheels, it is necessary to change dies, run out a few more and repeat this operation a few times, the day's output will be greatly curtailed and the cost of production rise to an unduly high figure.

It is the belief of the wheel manufacturers, and of your committee, that certain representative dimensions of wheels can be adopted which will meet practically all requirements. The great advantage of standards to the railway company arises from the fact that fewer designs mean lower production cost to the manufacturer and correspondingly lower prices to the consumer. Manufacturers advise that much of the multiplicity of design arises from differences in dimensions which are trivial for the most part, and if the consumer had a proposition put to him in this way, by the manufacturers: "We can give you just the wheel you are ordering, but if you find yourself able to use an Association standard, which differs only slightly from your own, we will be able to sell

this wheel to you for three or four dollars less per wheel than the one you call for," there is little doubt that the customer would waive any minor differences in size or design to take advantage of a pronounced economy.

A conference of wheel manufacturers was held in Chicago early in June, and the matter of standards was thoroughly discussed. This preliminary report was duly considered by the committee on equipment, and the committee recommends the sizes shown in the drawing illustrated herewith.

The fact that standard axle and standard height and thickness of flange as well as width of tread have been adopted by the association simplifies materially the task of proposing standards for rolled wheels. There is nothing in the committee's recommendation which conflicts in any way with previously adopted standards of the association, except that your committee suggests a change of flange contour, but in either case the height and thickness of flange and width of tread remain the same.

THE CHICAGO TERMINAL.

Baltimore & Ohio and Burlington to Settle Controversy.

A settlement of the controversy over the Chicago Terminal Transfer Railroad, which will turn that property over to the Baltimore & Ohio road, is pending, and may be announced shortly. In connection with the deal, however, there is a possibility that the terminal property may fall into the hands of the Hill interests, represented by the Burlington road. Several months ago the Burlington management decided to remain with the Pennsylvania and join in building new passenger terminals on the West Side. The new station project had been delayed owing to the desire of the Burlington to secure new terminals by purchase of the Chicago Terminal Transfer Railroad. This hung fire on account of the action of the Baltimore & Ohio, which purchased the bonds of the road, and then went into court and asked that the property be sold subject to the lease which the Baltimore & Ohio holds.

In the meantime the Burlington subscribed \$5,000,000 toward a new terminal depot at Canal street, becoming one of five partners, each putting up \$5,000,000 for the project. No longer desiring to secure the terminal property, the Burlington made an offer to the Baltimore & Ohio to either buy or sell.

B. & O. Improvements at Baltimore.

The Baltimore & Ohio, in connection with its grade-crossing improvements in South Baltimore plans to construct an overhead highway bridge, across tracks and yards, protected with concrete walls, and where possible without interference with the railroad tracks. Eventually all tracks will be lowered, but for present and until greater improvements are undertaken tracks will be lowered only where required in order to provide nec-

essary clearance under bridges. It is estimated the immediate construction will cost \$800,000 and acquisition of property, \$70,000; damage to abutting property will amount to approximately \$350,000. The city ordinance also provides for closing certain streets to enable the railroad to carry out plans for the future improvement of tracks and yards within the city limits.

Bessemer Railroad Ore Record.

With a record of less than 50 tons short to make the million mark in the handling of ore, the Bessemer railroad has set out to make the present month of October the record ore month for that road. Officers and men are confident from the appearance of things now that the record of 1,000,000 tons will be reached this month.

The closest the road has come to the million-ton mark was last July, when a total of 972,000 tons were carried. Several times before the total has passed the 900,000-ton mark.

Russia's R. R. Budget, \$31,000,000.

Cable advices from St. Petersburg say that the extraordinary budget of the Ministry of Railroads just submitted to the Duma calls for \$31,100,000 for new construction in 1910. All of this amount, with the exception of \$163,000, and will be expended in Siberia and one the Amur railroad.

The sum of \$11,500,000 is allotted to the railroad line around Lake Baikal and \$12,500,000 to double track the trans-Siberian railroad.

Rush Work on New Road.

At Princeton, W. Va., 200 men are working on the new machine and engine shops of the Virginia railroad. The power house has also been started and the company have decided to erect a large office building.

Freight Rates on Sheet Steel.

The rail rate on sheet steel, galvanized iron, etc., from Pittsburgh to Texas common points, has been reduced from 59 to 52 cents, effective October 10. This is a decided advantage for points in northern Texas. The rate to New York is 15 cents, and New York to Texas City, 16 cents.

Burlington to Build Shops.

It is reported from Lincoln, Neb., that the Burlington Railroad has decided to erect a locomotive shop at that point, whose probable cost, including machinery, will be \$1,000,000.

Cars for Export.

Bids have recently been asked for 100 industrial cars for export to South America.

NEW TERMINALS.

Plans for Memphis Station.

The incorporators of the newly-organized Memphis Union Station Company are M. H. Smith, president of the Louisville & Nashville Railroad; J. W. Thomas, Jr., president of the Nashville, Chattanooga & St. Louis Railway; Fairfax Harrison, vice president of the Southern Railway; J. L. Lancaster, president of the Union Railway and also of the Iron Mountain Railroad Company, of Memphis, and C. W. Nelson, of the St. Louis Southwestern. The new terminals are primarily to handle the passenger traffic of the Louisville & Nashville Railroad, the Nashville, Chattanooga & St. Louis Railway, the Southern Railway, the St. Louis, Iron Mountain & Southern Railway and the St. Louis Southwestern Railway, but if the Rock Island, the Frisco and the Illinois Central roads can be induced to join in the use of the proposed station, the facilities will be made ample to accommodate them.

It is estimated that the terminals to provide for the five lines will cost \$2,000,000, and if the other roads join the expenditure will be increased as may be required to amply provide for them.

All trains will back into the station and that no trains will run through it. Tracks will come in on the same level as the station floors, and under no circumstances will passengers be required to cross tracks or go up and down stairs.

The Detroit Terminal

As stated by the Industrial World last week, the contract for the structural work for the Michigan Central terminal, at Detroit, has been awarded to the McClintic-Marshall Construction Company, of Pittsburgh. The contract includes 7,800 tons of structural steel, to cost approximately \$400,000. The material is for use in the platforms, express offices and passenger station of the new terminal in Detroit near the tube under the Detroit river, now nearing completion.

This does not include the steel to be used in the new train sheds, which will be awarded later. The sheds will be low with higher space in the center to allow smoke from the engine stacks to escape. They will be similar to those at the Union station, Washington, D. C., and at the Hoboken station of the Delaware, Lackawanna & Western.

Inspect New Southern Road.

J. J. Jermyn, of Scranton, Pa., president of the Gulf, Texas & Western, Roy Megargel, of New York, the vice president, Rella Jermyn, of Scranton, a brother of the president, and Frank Barker, also of Scranton, have been making an inspection over the road which is now

completed from Jacksboro to Olney, 41 miles. Regular train service will soon be installed. Propositions are to be considered for building into Dallas or Fort Worth.

The company owns the old grade of the Dallas & New Mexico, which extends from Letot, in Dallas county, to Boonville, in Wise county, 63 miles. It is proposed to use this in building to Dallas.

Mr. Jermyn, the president, is a banker and coal operator in Pennsylvania. Mr. Megargel is a New York banker and one of the original promoters of the line. Ben B. Cain, vice president and general manager, has been an attorney in Tyler for many years. The Gulf, Texas & Western promoters are also heavily interested in coal properties along the line of Jack and Wise counties, which it is proposed to develop later.

TO CONTROL BIG SYSTEM.

Eight Corporations Absorbed at Bloomsburg—Extensive Development.

Announcement has been made at Bloomsburg, Pa., by E. R. Sponsler, of Harrisburg, president of the Columbia Power, Light & Railways Company, a \$1,500,000 corporation, which recently absorbed the Columbia & Montour and Danville & Bloomsburg Electric railways and the six electric and gas lighting plants in Columbia and Montour counties, that in the near future work will be started to extend the lines of the Columbia & Montour from Berwick to Wilkes-Barre, 32 miles, and the Danville & Bloomsburg from Danville to Sunbury, 14 miles, with the possibility of making further extensions to Shamokin and then throughout the West Branch, giving the holding company control of upward of 80 miles of railway.

It is stated that the present \$1,500,000 corporation is only the beginning of the absorbing and consolidating of electric plants in Central Pennsylvania and that eventually the Columbia Power, Light & Railways Company, whose main offices are at Bloomsburg, will be at least a \$5,000,000 corporation.

New Traction Contract.

The Fairmont & Northern Traction Company awarded the contract to Robert and D. F. Talbot, Fairmont, W. Va., contractors, for the construction of the trolley line from Fairmont to Fairview, a distance of 12 miles. The line will open up an oil region.

Spending \$300,000 at Syracuse.

New branches running to the Northside at Syracuse, N. Y., and extensive new freight terminals which the Lackawanna Railroad is putting in at Syracuse, N. Y., means an expenditure in Syracuse of more than \$300,000 by the Lackawanna during the next few months.

Corporations to Which Charters Have Been Granted Recently

PENNSYLVANIA.

Cyclops Foundry Company; \$5,000. Treasurer: K. K. George, 450 Fourth avenue, Pittsburgh. Directors: Frederick L. Orlady, I. C. Emory, K. K. George, all of Pittsburgh.

Crescent Slate Company; \$20,000. Treasurer: John S. Mack, Slatington, Pa. Directors: John S. Mack, James W. Mack, S. A. Mack, all of Slatington, Pa.

Cunningham Coal Company; \$10,000. Treasurer: George E. Reynolds, Frick building, Pittsburgh. Directors: George E. Reynolds, S. E. Shearon, James A. Ellis, all of Pittsburgh.

The M. E. Kraybill Light, Heat & Power Company; \$25,000. Treasurer: Martin E. Kraybill, Boiling Springs, Pa. Directors: Martin E., Cora J. Kraybill, Boiling Springs, Pa.; Benjamin E. Kraybill, Johnstown, Pa.; John A. Herman, Harrisburg, Pa.

Pennsylvania Flexible Metallic Tubing Company; \$100,000. Treasurer: Henry A. Ansell, The Covington, Thirty-seventh and Chestnut streets, Philadelphia. Directors: Samuel H. Collom, Henry A. Ansell, Philadelphia, Pa.; Francis F. White, Upper Montclair, N. J.

Pittston Electric Company; \$5,000. Treasurer: Frank P. Hunter, Philadelphia. Directors: Frank P. Hunter, Harry L. Finley, Philadelphia, Pa.; Frederick W. Drager, Elizabeth, N. J.

Luten Bridge Company; \$5,000. Treasurer: G. W. Drury, York, Pa. Directors: J. F. Whittaker, Harrisburg, Pa.; L. G. Brown, J. H. Dobbling, A. B. Whittaker, G. W. Drury, all of York, Pa.

Pottstown Conduit Company; \$5,000. Treasurer: Herbert G. Williams, Pottstown, Pa. Directors: Herbert G. Williams, William L. Binder, Frederick S. Roesch, all of Pottstown, Pa.

Altoona & Bedford County Railroad Company; \$400,000. President, W. W. Rudisill, Altoona; directors, Frederick Bendheim, F. W. Patterson, Harry Slutzker, J. F. Kauffman, W. H. Irwin, W. L. Longenecker, Altoona, Pa.; J. H. Brown, Loysburg, Pa.; J. D. Hagey, Martinsburg, Pa.; D. E. Unger, South Fork, Pa.

Makoma Coal Company; \$10,000; Walter P. Maguire, 14 South Second street; LeRoy J. Wolfe, Charles L. Bailey, Jr., Harrisburg, Pa.

Standard Tin Plate Company. Increased capital stock from \$300,000 to \$500,000.

Tioga Coal Company. Increased capital stock from \$450,000 to \$725,000.

NEW YORK.

De La Vergne Engine Company, Bronx; manufacturing machinery, engines, boiler pumps, ice-making and refrigerating machinery; \$10,000. Harry Praeger, 118 West One Hundred Forty-third street; John J. McElhinny, 34 West One Hundred Twenty-ninth street; Robert D. Eggleston, 507 West One Hundred Fifty-eighth street, New York.

Bramiller Company, Manhattan; manufacturing paint and coloring substances, build boats and vessels; \$35,000. William Miller, 292½ Union street, Jersey City, N. J.; George H. Childs, 2 Stone

street, New York; Daniel J. Lee, 423 Third street, Brooklyn.

The New Lamp Company, Manhattan; manufacturing lamps, lanterns, lighting devices; \$50,000. Frederick C. Tompkins, Henry Heinemeyer, 727 Seventh avenue; Thomas Butt, 23 Park Row, New York.

New York Igniter Company, Manhattan; manufacturing lighting and heating devices; \$40,000. James C. Wormley, Hotel Imperial Charles R. Sherlock, Allen S. Curlett, 44 West Eighteenth street, New York.

Hercules Building Company, Syracuse, N. Y.; manufacturing cement building blocks, building materials, construct buildings, etc.; \$6,000. John W. Nefinger, Nicholas J. Turch, George Nefinger, Syracuse.

Buffalo Foundry Supply Company, Buffalo; manufacturing tundry facings and core-wash; \$20,000. Harry Heinsheimer, Marc Heinsheimer, Jay C. King, all of Buffalo.

OHIO.

Twin City Light & Fuel Company, Zanesville; C. Lou Wright, E. M. Armstrong, A. C. Armstrong, J. R. Grenier, Charles Graves; \$100,000.

The Dover Brick & Tile Company, Cleveland; E. H. Arnold, G. B. Sloat, G. W. Arnold, J. H. Price, F. H. Burnap; \$6,000.

American Folding Machine Company, Cleveland; A. D. Fejano, John J. Zeitz, G. A. Nicol, Harvey Boffenmeyer; \$100,000.

Brown Automatic Hose Coupling Company, Cleveland; Edward G. Brown, Charles Eisele, P. L. Andrews, C. L. Andrews, Meyer Gelerd; \$30,000.

Rex Manufacturing Company, Columbus; F. L. Mercer, T. Kerns, Ira Seely, William Mercer, Thomas Beard; \$10,000.

The Gramm-Logan Motor Car Company, Bowling Green; increase of capital from \$100,000 to \$300,000.

ILLINOIS.

Clemore Manufacturing Company, Chicago; manufacture street railway equipment; \$15,000; Charles M. Carpenter, Simon La Grou, Charlotte Doolittle, Duncan Moore.

McGregor Bumper Company, Chicago, Ill.; manufacture vehicle appliances; \$5,000; Allan L. McGregor, Barnett J. Cook, Howard W. Lewis.

Boston Fuel Company, Chicago; mining coal and manufacture coke; \$10,000; Lewis W. May, Stephen Lawson, John O'Connor.

Consolidation Coal Company; dealing in coal and coke; \$20,000,000; Maryland corporation.

Western Welding & Manufacturing Company, Chicago; metal welding and manufacturing; \$2,500; Otto Malcher, Leo M. Malcher and William Edge, Chicago.

Carrollton Electric Company, Carrollton; operate a light, heat and power plant; \$25,000; Oran Pierson, Elmer S. Simpson, Stuart E. Pierson and F. A. Whiteside, Carrollton, Ill.

B-Z B Knitting Company, Rockford; manufacturing knitting machinery; \$28,-

000; Wilson W. Burson, William H. Zieck, Frank R. Brown and R. K. Walsh, Rockford.

Fidelity Motor Car Works, Sycamore; manufacturing automobiles and accessories; \$25,000; F. C. Brinkley, Byron J. Snow and J. F. Waters, Sycamore, Ill.

Hatcher Refrigerator Company, Chicago; manufacturing refrigerators; \$3,000; W. S. Johnson, 655 First National Bank building, Chicago.

Alliance Coal Company, Indiana corporation; dealing in coal and mining supplies; \$100,000; J. K. Seiert, Old Colony building, Chicago.

Edinburg Cement & Tile Company, Edinburg; cement and tile, manufacturing and construction work; \$10,000; J. R. Harrington, B. A. Turner and G. W. Milligan, all of Edinburg, Ill.

East St. Louis Automobile Company, East St. Louis; manufacturing automobiles and accessories; \$2,500; M. L. Harris, Carl O. Houseman, J. R. McMurdo and M. R. McMurdo, East St. Louis.

Western Architectural Iron Company, Chicago; manufacturing ornamental metal work; \$15,000; E. T. Noonan, W. F. Collins and Henry Morton, Chicago.

Lake View Gas Fixture Company, Chicago; manufacturing gas fitting and fixtures; \$2,500; Aplona Alles, Gertrude Alles and Josephine Alles, Chicago.

Revolving Clothing Case Company, Champaign; manufacturing devices; \$2,500; Jacob M. Kaufman, Frank A. Wilske, Hattie F. Kaufman and H. Leonard Jones, Champaign, Ill.

Le Compte Company, Chicago; manufacturing railway supplies; \$50,000; E. S. Maserson, Atwood building, Chicago, Ill.

NEW JERSEY.

American Concrete Piling Company, Camden, N. J.; form and drive concrete piles, or piles of metal wood or other material; \$50,000. Louis E. Welsh, Frank Overn and Elmer S. Holmes, Camden.

The Rathjen Company, W. Hoboken, N. J.; ornamental, structural, metal and iron work; \$10,000. Louis Rathjen and Louise Rathjen, W. Hoboken; William Reindel, Weehawken, N. J.

New Brunswick Iron Works, New Brunswick, N. J.; iron, steel, wood, lumber, etc.; \$30,000. Alexander, Thomas T. and Agnes Henderson, Highland Park, N. J.

Manganese Steel Safe Company, Plainfield, N. J.; name changed from Manganese Steel Safe & Vault Company.

C. B. Brokaw Auto Company, Plainfield, N. J.; manufacturing automobiles and other vehicles; \$20,000. Clarence B. Brokaw, 135 DeLacey avenue; Alonzo F. Brokaw, 32 Grand avenue, Plainfield, N. J.; Walter B. Hopping, 261 Broadway, New York.

The Monarch Grinding Wheel Company, Camden, N. J.; name changed from Monarch Emery & Corodum Wheel Company.

Mono Motor Car Company, 103 Broad street, Elizabeth, N. J.; manufacture motor cars, motor boats, aeroplanes, etc.; \$300,000; W. H. Wood, H. T. Eaton, Charles Roberts, all as above.

The Spencer Motor Company, Rah-

way, N. J.; manufacturing automobiles and other vehicles; \$125,000. Charles G. Willis, 221 St. John's Place, Brooklyn, N. Y.; Henry Albisser, Monroe street; A. Gibby Spencer, 60 Grand street, Rahway, N. J.

Eastern Wagon Works, 1008 Arctic avenue, Atlantic City, N. J.; general wheelwright business, \$50,000; Bertha Fels, Harry A. Appleton, Frederick C. Fels, Atlantic City.

Westchester Appliance Company, 15 Exchange Place, Jersey City; manufacture automobiles and other vehicles, \$2,000. H. O. Coughlan, John B. Turner, S. A. Anderson, all as above.

Keystone Scrap Iron & Metal Company, Camden, N. J.; deal in brass, copper, iron, etc.; \$10,000; F. R. Hansell, George H. B. Martin and John A. MacPeak, Camden, N. J.

Milburn Coal & Coke Company, of Pittsburgh; \$300,000; R. M. Lucas, R. J. Odell, J. C. Nailor, Kenneth Little, C. E. Blanchard, all of Columbus.

White Rock Sand Company, of Fairmont; \$100,000; Roland R. Wallis, J. L. Henderson, W. N. Engle, William J. McElheny and John Henshaw, all of Fairmont.

WEST VIRGINIA.

Spruce Coal Company, Beckley; \$25,000; T. E. Bibb, B. E. Carter, G. C. Hedrick, W. H. Rardin, of Beckley; W. Gaston Caperton, of Slab Fork.

Shamrock Coal Company, Welch, chief works in Logan county; \$15,000; P. J. and J. S. Riley, of Halsville; M. J. Riley, A. Z. Litz and R. R. Smith, of Welch.

Graham Coal & Coke Company, Morgantown, chief works in Marshall county; \$300,000. E. M. Everly, of Morgantown; W. J. Johnson, George G. Gans, S. M. Graham, Jr., of Uniontown, Pa.; W. S. Bumbaugh, of Monessen; J. F. Vanvoorhis, of Dunkard; Ira D. Knotts, of Davistown.

INDIANA.

Burke & Durbin Company, Anderson; \$10,000; railway contractors; P. H. Durbin, Lee Burke, Edward Burke, John Burke and James Burke.

Peru Auto Parts Company, Peru; \$200,000; to manufacture automobile wheels; S. H. Penfield, B. S. Dean, E. D. Shearman, Frederick Brown, Jr., and John Tomey.

Automatic Jack Company, Bloomfield; \$30,000; manufacturers; P. J. Harrah, C. E. Benefield and C. E. Henderson.

Wayne Chair Company, New Haven, Allen county; \$25,000; manufacturers; H. C. Paul, C. E. Bond and E. M. Wilson.

Garwood Brothers Company, North Manchester; \$25,000; machinery manufacturers; A. R. Garwood, B. V. Garwood and J. A. Garwood.

Decatur Motor Car Company, Decatur; \$150,000; manufacturers. Julius Haugh, J. S. Bowers and five others.

Webb-Baxter Company, Anderson; \$25,000; to manufacture vacuum cleaners. H. D. Webb, Noah Baxter, N. P. Salting and C. I. Kemery.

Indiana Tie & Creosoting Company, Bloomington; notice of change of name to the Indiana Creosoting Company.

The Delphi, Flora & Burlington Traction Company, Delphi; \$125,000; to construct and operate a traction line from Delphi to Burlington through Flora; E.

W. Bowers, J. C. Smock, William Donlin, F. S. Blythe and M. G. Hann.

Fish Systems Company, Indianapolis; electrical apparatus manufacturers; \$50,000; George L. Fish, R. C. Davis, J. D. Arenson, H. F. Hurster and E. A. Leeson.

The Pilot Motor Car Company, Richmond; capital stock \$100,000; manufacturers; Directors, G. E. Seidel, C. H. Kramer and H. M. Kramer.

The Hohn Cement Machine Company, Indianapolis; capital stock \$20,000; manufacturers; Directors, A. H. Byfield, C. W. Byfield and F. C. Hohn.

Farmers' Implement Company, South Bend, \$6,400. Dealers. A. J. Diermeyer, G. O. McClellan and Henderson McClellan.

DELAWARE.

Kentucky Rapid Transit Company; \$10,000,000; F. R. Donahue, Albert J. Shermer and Harry W. Davis, all of Philadelphia.

Anti-Friction Wheel Company; capital \$150,000. Incorporators: Thomas Bernstein, No. 603 Ridge avenue; G. D. Williams, No. 715 Arlington avenue, both of Pittsburgh; George L. Lothamer, No. 315 Taylor avenue, Bellevue, Pa.

Lynewitpe Manufacturing Company, Dover, Del.; capital \$500,000. Incorporators: J. Floyd King, Harry A. Hood and George P. Robinson, all of Washington, D. C.

Sterling Typewriter Company, Dover, Del.; capital \$250,000. Incorporators: Daniel P. MacLavin and J. E. Simpson, both of Brooklyn, N. Y.; W. I. N. Lofland, Dover, Del.

Cleveland Coal Company; \$75,000; John T. Furlong and R. A. Bloomfield, Pittsburgh; Harry W. Davis, Wilmington, Del.

Chicago Culm Furnace Company, Corporation Guarantee & Trust Company, Wilmington, Del.; \$700,000; F. R. Hansell, George H. B. Martin and S. C. Seymour, Philadelphia, Pa.

Central Automobile Company, of Johnstown, Pa., to manufacture, buy and sell all kinds of automobiles and motor vehicles. W. W. Grove, Edward A. Vivis, James McCloskey, all of Johnstown, Pa. \$50,000.

Susquehanna Clay Products Company, American Security & Trust Company; \$100,000. Andrew Appleton, Darby, Pa.; Walton Killen, Philadelphia, Pa.; Edgar S. Parsons Darby, Pa.

MASSACHUSETTS.

Brockton Rubber Tire Company, Brockton; manufacturing and sale of rubber tires; \$50,000; Wallace C. Flagg, 157 Belmont street; C. Gust Nelson, 169 West Elm street; McLeod & Sweet, 106 Main street, Brockton.

Travella Shuttleless Loom Company, Boston; manufacture and sale of looms and machinery; \$150,000. President, Hector Chairiglione; treasurer, Albert B. Fopiano; clerk, Antonio A. Capotosto, 625 Exchange building, Boston.

MISSOURI.

Hogbee Block Coal Company, Kansas City; \$150,000. Charles F. Larson, E. N. Chesney, William Walton and others.

Kennel Machine Company. A. G. Kennel, 225 shares; Ernest F. Nelson, 120; O. M. Kennel, 75; J. Simpkins, 30. To manufacture and repair coin-controlled machines; capital stock, fully paid, \$45,000.

BRAZIL'S IRON ORE DEPOSITS.

(Continued from Page 1215.)

amphibole, chlorite, and taceous schists), much injected with granite, and overlaid by a heavy series of partially metamorphosed sedimentary beds, profoundly folded and faulted. In this series, which consists principally of quartzites and clay slates with subordinate beds of limestone, a prominent member is the peculiar iron-bearing quartzite to which the name of "itabirite" has been applied. This name was originally proposed by Eschwege, in 1882, for the massive, pure iron ore of which the peak of Itabira do Campo, among others, is composed, and which is associated with schistose rock composed of granular quartz and scaly hematite, which he discriminated as iron mica schist. By common usage the name has come to be applied to the latter rock, and it is only in this sense that its retention can be justified as a convenient term that would otherwise have to be designated by an awkward and misleading descriptive name. Through variation in the proportions of the constituent elements this type of rock grades off on one side to a purely quartzose, and on the other side to a purely hematitic phase. The phases sufficiently rich in iron to be commercially valuable may be conveniently designated as itabirite ores. This shows all possible gradations from an almost pure quartz rock with scattered flanks of hematite to a massive hematite free from quartz. The latter presents itself as intercalated layers, or lenses, varying from a few millimeters up to scores of meters in thickness, alternating with leaner quartzose portions. When limestones are associated with the series, they also are more or less heavily charged with flakes of hematite and are frequently associated with commercially valuable ores of both iron and manganese.

Taken as a whole, the itabirite beds, which are often of great thickness, become, when exposed to the weather, extremely friable, and as the region is one of heavy rainfall (1,500 to 2,000 millimeters) they have been extensively denuded. In consequence of this, the massive portions, when they occur, stand out as topographical features; the rain and wind swept slopes become covered with a rubble of iron ore due to the breaking up of the thinner intercalated layers, more or less completely freed from the associated siliceous elements by rain and wind action, and the bottom lands of the valleys become charged with deposits of iron sand separated by the natural sluicing of the streams. There are thus produced from the same series of beds three classes of ore, namely: (1) Quarry ore, in the peaks and other natural exposures in situ of the massive

portions of the rock; (2) rubble ore, on the denuded surfaces; and (3) sandy ore, in the valleys where sluicing action has taken place. To these must be added a fourth class, the so-called "canga" (contraction of Tapanhoacanga, i. e., "Negro's Head"), due to the cementation by limonite of the rubble ore into a hard-stone conglomerate. It is probable also that still a fifth class might be recognized in the outcrops of quartz-hematite rock sufficiently friable to permit the separation of the metallic mineral by sluicing.

From the above description it is evident that attempts to estimate the amount of ore in the district must be extremely fallacious. Practical iron men and geologists who have visited parts of the district (no one has an intimate knowledge of it as a whole) hesitate to pronounce impossible estimates that at first sight seem utterly preposterous. Prof. Henry Gorceix, founder and for many years director of the mining school of the mining school of Ouro Preto, who had a very intimate knowledge of the district, stated in a public lecture in 1881: "I have estimated in five billion tons the ore that Minas Geraes might furnish, and I fancy that I should not be exaggerating if I should double this estimate." Prof. Richard Penrose, the well-known economic geologist, who rode with me over a small part of the district mainly included in a large property for which the owners' estimate was of "hundreds of millions of tons," says in a private letter: "I do not know just what the extent of their property is, but though one can not see such quantities of ore actually blocked out, yet I would not consider such a statement impossible of future realization in the regions you and I visited last year. I think that such quantities might be produced. Of course, where the iron alternates in thin lamellae with the siliceous layers it is undesirable as an ore, because it too siliceous. If, however, we exclude such material and count only the larger bodies of pure ore that occasionally occur in it, such as the iron ore peak, Itabira do Campo, which we visited, and then consider the area of country over which the iron formation extends, the possible tonnage is immense."

The cubic contents of a limited number of the ore bodies have been estimated by competent observers on the basis of actual approximate measurements of their outcrops, but for the most part this has been done by private parties, and the information is not available. The following examples of estimates made by Dr. Gonzaga de Campos, of the Serviço Geológico, are believed to be as reliable as can at present be made, and will serve to give an approximate idea of what the figures may amount to when the dis-

trict becomes better known. These estimates for nine of the deposits are as follows:

	Cubic meters.
Gava	72,000,000
Conceicao	80,000,000
Esmeril	19,000,000
Caue (Itabira peak)	33,000,000
Pitanguy	14,000,000
Sao Luiz	8,000,000
Peak of Itabira do Campo ...	8,000,000
Rio de Peixe	10,000,000
Cocaes	3,000,000
Total	247,000,000

Taking the specific gravity of these ores as 4, this volume represents 988,000,000 tons. The above list includes several of the largest-known deposits, so that the contents of the others can not be estimated on a proportional basis; but it seems quite safe to assume for them at least an equal volume, which would double the above figures. In these estimates no account is taken of the presumed underground extension of the visible ore bodies.

No attempt has been made to estimate the volume of the rubble ore deposits, which are both numerous and extensive throughout the district. So far as the writer has learned only one such deposit has been actually measured by competent mining engineers, and this is said to carry "20,800,000 tons of rubble ore, easy for stoking, carrying 50 per cent iron." From what is known of the district it seems quite safe to assume that there are scores of deposits of equal importance and that in the aggregate the volume of rubble ore is at least equal to that of the quarry ore.

As regards the Canga, Dr. Gonzaga de Campos estimates that it covers about 10 per cent of the area occupied by the iron-bearing formation, which is about 5,700 square kilometers. For the purposes of calculation, however, he takes 5 per cent with a mean thickness of two meters which gives 570,000,000 cubic meters, which, calculated with a mean specific gravity of 3, gives 1,710,000 tons of ore, whose mean iron contents will probably oscillate in the neighborhood of 50 per cent.

As regards the quality of these ores, the analyses at hand are naturally of hand specimens only, but all, mineralogists and metallurgists alike, who have examined the outcrops agree that on immense rock faces, such as represented of the peak of Itabira do Campo, no differentiation of richer and poorer portions is perceptible to the eye.

Most of these analyses are deficient from an industrial point of view, as in the majority of them the phosphorus contents is given vaguely as "traces," without accurate determination, and no reference is made to titanium, leaving

it doubtful whether this element had been especially looked for or not. The oxide of iron contents is generally given as from 97 to 99.5 per cent, the remainder being almost exclusively silica. In two cases in which, at the writer's suggestion, special tests were made for titanium none was found, and from this and other considerations it seems safe to assume that as a class these ore are practically free from it.

The most reliable phosphorus determinations at hand are from samples from two different localities submitted to the Krupp works and those of the United States Steel Corporation, both of which give the same result—namely, 0.0024 per cent. In this connection it may be mentioned that some years ago the writer was consulted by the eminent French metallurgist, F. Gautier, who was then in charge of the Esperanca works, working on rubble ore from near the Itabira do Campo Creek, as to where he could obtain for admixture an ore higher in phosphorus. In short, the quarry ores of the district here considered may be safely set down as existing in immense quantities and as of high and, within certain limits, uniform quality. * * *

Aside from the district above discussed and of its various prolongations that have not yet been examined, hematite ores are known to exist in various other districts of the State of Minas Geraes and in various other States of the Republic. These are generally considered, in most cases without sufficient evidence, to be substantially identical, as regards geologic conditions, with those above described. Nothing is definitely known regarding their extent, but those of the western part of the State of Minas Geraes, the central part of the State of Goyaz, the Soa Francisco region of the State of Bahia, and the Corumba district of the State of Matto Grosso are presumed to be extensive.

With the present means of transportation or with those that are likely to exist in the near future the greater part of these deposits must be regarded as inaccessible. The exceptions are those situated along the River Sao Francisco, in the State of Bahia, and near the banks of the River Paraguay, in Matto Grosso. The former can be reached by 574 kilometers of railway from the port of Bahia to Joazeiro and by a certain amount of river transportation upstream from that point, and also by 1,010 kilometers of railway from the port of Rio de Janeiro to Pirapora and downstream navigation from that point. The Matto Grosso ore deposits situated in the Urucum Mountains are about 30 kilometers from the river port of Corumba, which is 1,000 kilometers from the seaport of Rosario, in the Argentine Republic.

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Foundry Foremen and Others wanted to increase their earning capacity 25 to 50 per cent, by taking a course in the mixing of irons with the Milwaukee Correspondence Schools, Goldsmith Bldg., Milwaukee, Wis.

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Wanted — Master Mechanic; responsible, live man, experienced in the manufacture of high-grade machinery and large construction works, mills, smelters, etc., in the States, Canada and South America. Address B. Nilus, 33 St. Johns, Ore.

Wanted — Foundry foreman, for chilled and sand rolls, loam and heavy floor work. Answer, stating age, experience, salary wanted, and full particulars. Address Box 220, care Industrial World.

Wanted — A second-hand 15 or 16 h. p. stationary gas engine. Address Norwood Machine Company, Cincinnati, O.

Wanted — Manufacturers wanted to build cold rolled shafting machinery on

royalty basis, under United States patent No. 895,364, dated August 4, 1908, described in the Industrial World December 28, 1908. Address John S. Griffin, Roslyn, Washington.

SEALED PROPOSALS.

Machines for Tabulating Agricultural Statistics. — The Director of the Census is considering various types of machines with a view to determining the one best adapted for tabulating the agricultural statistics of the Thirteenth Census. Any one possessing a machine adapted for this purpose is invited to present the same for test in practical operation at the Bureau of the Census, Washington, D. C., on or before July 31, 1909. For further information address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

Sealed Proposals will be received at the office of the Director of the Census, Washington, D. C., until 2 o'clock p. m., August 9, 1909, and then publicly opened. For furnishing all the labor, materials, and work necessary for the construction in lots of 60, 75, 100, or 125 tabulating machines and delivering the same complete, free of all charges for transportation, at the Census Building, Washington, D. C. right is reserved to accept or reject all bids in whole or part, to strike out any item or items in the specifications, and to waive any defects. For specifications, blueprint drawings, blank proposals, and full information, address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

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For Sale—Steam engine. Wetherill Corliss, R. H., 22x48, 250 H. P., first-class condition, cost \$3,300, will sell for less than half price, a bargain. Keppel & Company, Chester, Pa.

For Sale — One second-hand 8x9" Chuse engine, direct connected to 15 k. w. Triumph generator; good condition. Electric Machinery & Specialty Company, 204 Franklin avenue, St. Louis, Mo.

For Sale—Rock Drill—Ingersoll make; motor, 1 h. p., complete; shafting, pulleys, hangers, belting, lathes, 1 drill press, cheap; boilers, engines, pumps. William H. Flynn Machinery Company, 404 East Second street, Cincinnati, O.

Machinery Bought, Sold and Repaired — Engines and boilers, all styles and sizes, both new and second-hand; machinery of every description for all purposes; also pulverizer and crushers. Write to me for anything you want. Gruendler Machine Company, 928 Main street, St. Louis, Mo.

For Sale—One 18x24" slide valve engine 2 66"x18" tubular boilers, 1 heater, 1 deep-well pump and 5 wood working machines; will overhaul and put in first-class condition, cheap; also, several direct current motors, 3, 5, 10 and 15 h. p., 220 volts. The Farrin-Korn Lumber Company, Winton Place Station, Cincinnati, O.

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"THE LITTLE REPUBLICS."**Cincinnatian Returns from Journey
Pleased With Central America.**

Maximiliano Aviles, foreign trade representative of Rheinstrom Brothers, has just returned from a business trip covering 8,000 miles, through Panama, the Central American republics and Mexico, says the Cincinnatian "Enquirer," in a recent issue. He is very enthusiastic over the markets of these countries, which, he says, offer golden trade opportunities for the American merchant and manufacturer.

Mr. Aviles also made it his business to study political and social conditions, especially in the Central American republics, and he predicts that the United States will soon control these countries by controlling their finances. In two of the Central American republics large loans are now being negotiated by New York banking houses, and in which J. P. Morgan & Company are taking a hand. Costa Rica has under consideration a loan of \$13,000,000, while Guatemala is considering a loan of \$30,000,000. Strong features of these loans are clauses in which the eventuality of either republic to meet its obligations is met, and provides in such delinquency for the United States to take possession of the customs houses and administer them in the interests of the country and the creditors. In this way, Mr. Aviles says, the Washington administration is cleverly securing a domination of these countries through control of their finances, and that their progress and improvement will move along unhindered and at an accelerated pace.

"A study of the map shows that Honduras," Mr. Aviles says, "is a strip of territory between Guatemala and Nicaragua, the two republics most likely to get together. Through its financial obligations to Uncle Sam, Honduras is, therefore, in a position to be diplomatically used to prevent hostilities by preventing the soldiers of either republic crossing this neutral territory.

"Regardless of these speculations, I want to say that trade opportunities in these countries are great. The English, the German and the French are there already and the Yankee is coming. The American manufacturer or business man should not send his ordinary salesman there, for methods of business are different from those he is accustomed to in this country. He should send a trade ambassador—a man to study those people, their wants, needs and their ways of doing business. And you must not try to sell them things they will not have. The American manufacturer must adapt his plans, patterns, molds and goods to the tastes and desires of the people in those countries and adapt him-

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self to do business with them in their way. This will, I know, entail much expense, but in the long run it will be found that it will pay. The people would prefer to do business with Americans."

He also pleads hard for the American merchant marine and the extension of American banking facilities in those countries. He declares that it is a misunderstanding of the people of the North to think that the people down there are not civilized, but, on the contrary, they are civilized and use the goods and wares of civilization in large quantities.

He came North through Mexico, and says that the talk of rebellion following the Presidential election is a sad mistake and is leaving the wrong impression on the American mind.

GERMAN IRON TRADE.

Slight Increase in Exports.

Concerning the iron trade of the German Empire for the first six months of the year, compared with the same months of 1908. Consul-General A. F. Thackara, of Berlin, writes the Bureau of Manufacturers:

For the first six months of 1909 the exports were 1,872,568 tons, an increase of 46,819 tons; the imports for 1909 were 211,727 tons, a decrease of 72,789 tons.

The pig iron production for the first six months of 1909 was 6,252,489 tons, an increase of 212,768 tons. With the exception of the production during the first six months of 1907, which was 6,355,953 tons, the output of the German furnaces during the same period in 1909 was the largest in the history of the industry.

While opinions as to the present condition of the German iron market may differ, it is admitted, even by the most optimistic, that there has been no permanent improvement, and none can be expected before next spring, as long-term contracts have been made at low prices. The present stagnation is not caused by an abnormally small demand for the raw material, for in certain centers sales have been increased, but the prices are exceedingly low, falling in some instances below the cost of production. The unfavorable prices are owing to the efforts of the producers to get rid of surplus stocks, accumulated through over-production, and to the effects not only of the ruinous internal competition, but to the keen competition met with in foreign markets. Although the prices of finished and half-finished steel products have become firmer, yet they are still very low and, as with pig iron, contracts until the end of the year for the finished and half-finished material have been made at prices which will show very small, if

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any, profit to the producers. According to the annual report of the German Steel Syndicate for the business year 1908-9, which has recently been published, the total sales of raw steel were 4,801,998 tons, as against 5,426,908 tons during the preceeding year.

Proposed Berlin Tool Show.

The Berlin correspondent of the New York Sun says: A favorable impression is beginning to arise concerning the hitherto mysterious American exposition to be held next year. With the permission of the American Association of Commerce and Trade its secretary, George Atwood, has taken of the management. No official action regarding the exposition has yet been taken by Ambassador Hill or Consul Thackara, but this will probably follow once the enterprise is well and solidly under way.

"The big firms of Ludwig Soewe, the chief manufacturers of machine tools in Germany; Jacob Ravene & Company, the largest manufacturers of hardware; Max Ludwig Goldberger and the Charles A. Schieren belting firm, the head of which was once Mayor of Brooklyn, have all promised active participation. The people of Germany are now watching to see what genuine support will be given by America.

"Mrs. Hill, wife of the American Ambassador, contemplates lessening the rigors of the Advent period here by arranging a set of lectures at her house by men of distinction of different nationalities. German, French and American."

MARKET FOR GAS STOVES IN ONTARIO.

The following information concerning a new natural-gas enterprise in Ontario is furnished by Consul F. C. Slater, of Sarnia:

A company is piping natural gas from the field near Chatham to Sarnia, a distance of 60 miles. A number of small towns and farmers on the way will be supplied, including the town of Wallaceburg. Two or three other companies have been formed to supply surrounding towns with this gas, one company laying a line to Dresden. About 25,000 persons will be supplied in this way.

Artificial gas in those towns now costs from 95 cents for fuel purposes to \$1.50 for illuminating purposes, per 1,000 feet, while the natural product will be sold for 25 cents. This will result, practically, in everything along the lines becoming a consumer of the natural product, and as a consequence there will be a big demand for gas stoves, heaters, burners, mantles, and all kinds of gas pipes and fixtures. American manufacturers of these goods ought to make an effort to secure their share of the trade.



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IRON ORE INDUSTRY OF CUBA.

The iron ores which have been mined in Cuba up to the present time consist largely of hematite and magnetite and are obtained near Santiago, in the Province of Oriente (Santiago). Recently large deposits of brown ore have been attracting considerable attention, especially those of the Mayari and Moa fields in Oriente Province and those of the Cubitas field in Camaguey Province. No ores of this type have been mined, however.

The following table, taken from a report by E. C. Harder, of the United States Geological Survey, issued as an advance chapter from "Mineral Resources of the United States, calendar year 1908," shows the shipments of iron ore from Cuba since the opening of the mines in 1884.

Shipments of iron ore from mines in the province of Oriente (Santiago), 1884-1908, in long tons.

1884.....	25,295
1885.....	80,716
1886.....	112,075
1887.....	94,240
1888.....	206,061
1889.....	260,291
1890.....	363,842
1891.....	264,262
1892.....	341,654
1893.....	351,175
1894.....	156,826
1895.....	382,494
1896.....	412,995
1897.....	454,285
1898.....	168,339
1899.....	377,189
1900.....	446,872
1901.....	552,248
1902.....	699,734
1903.....	623,621
1904.....	387,273
1905.....	561,159
1906.....	640,574
1907.....	681,393
1908.....	819,434

By far the larger proportion of this are came to the United States, the imports from Cuba in 1908 being 579,668 long tons. This was about three-fourths of the total imports of iron ore; in 1907 Cuba supplied a little more than half the ore imported.

A little 12-page booklet of envelope size has just been issued by the Joseph Dixon Crucible Company, Jersey City, N. J., describing their facings for various kinds of work. Some general information in brief on the proper use of facings, values of different kinds, and working conditions met in foundry practice, occurs in the booklet. How a facing actually behaves in the mold is accurately described by an analogy to a drop of water on a red hot stove. It is explained how the water itself never comes in actual contact with the hot surface.

The Intercolonial Railway of Canada, has issued a rather extensive list for tools.

SCAIFE FOUNDRY & MACHINE CO., LTD.

MAKERS OF

MACHINERY and CASTINGS

For Blast Furnaces, Hot Blast Stoves, Rolling Mills,
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Crushing Rolls for Coal and Coke.
Coal Washing Plants.

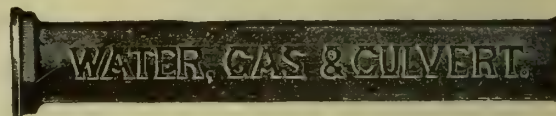
Conveyors and Elevators, Cold and Hot Saws
Hydraulic Machinery,

Geared and Hydraulic Cranes, Roll Lathes,
Drop Hammers, Crocodile Shears,
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Bell and Spigot Specials. Flanged Specials. Flanged Pipe. Flexible Joint Pipe.

"JAMISON" SELECTED FOUNDRY COKE.

NOT how cheap, but HOW GOOD. We respectfully submit that this question is worth the Foundryman's most serious consideration, and a saving of 15 or 25 cents per ton on the Coke may mean a totally different result in the cost of your Castings.

¶Improvement is the order of the day with Jamison. 60 determinations from our shipments within the past two months showed this average, viz.:

Ash	10.04
Sulphur .....	.86

¶Our constant aim is to MAKE BETTER COKE regardless of cost. February, 1909, 72-Hour shipments of 19,000 tons, proves that our efforts are appreciated by our valued trade.

¶Won't you give us a chance to tell you more about this Coke?

JAMISON COAL & COKE CO.

FRICK BUILDING ANNEX
PITTSBURGH, PA.

N. Y. ELECTRICAL SHOW.

Many Exhibitors at Madison Square Garden Exhibition.

With more than 50 exhibitors enrolled, the Third Annual New York Electrical Show at Madison Square Garden, last week, outshone any of its predecessors.

The class of exhibitors covered the entire range of electrical manufacture and its application to all phases of industry. New ideas in electrical application were to be found in exhibits by many specialty concerns. A full list of the exhibitors follows:

American Electric Lamp Company, 153-9 Jefferson street, Philadelphia.

American Metal Hose Company, 173-87 Lafayette street, New York.

Automatic Electric Washer Company, Newton, Iowa.

Collins Wireless Telephone Company, 54 Clinton street, Newark.

Consolidated Telegraph & Electrical Subway Company, 66 Lafayette street, New York.

Duntley Manufacturing Company, Thirty-fourth street and Broadway, New York.

Edison Electric Illumination Company, of Brooklyn, 360 Pearl street, Brooklyn.

Electric Cleaner Company, Monadnock building, Chicago, Ill.

Electric Home Supply Company, 45 West Thirty-fourth street, New York.

Electrical Review & Western Electrician, 13-21 Park Row, New York.

Electric Suction Sweeper Company, Philadelphia.

Electric Storage Battery Company, Philadelphia.

Electrical Testing Laboratories, Eighth street, New York.

Electrical World, 239 West Thirty-ninth street, New York.

Empire Vacuum Company, 110 West Thirtieth street, New York.

Excello Arc Lamp Company, 30 East Twentieth street, New York.

Fox Brothers & Company, 126 Lafayette street, New York.

German-American Electric Company, 110 West Fourteenth street, New York.

General Compressed Air & Vacuum Cleaning Machinery Company, 315 Fifth avenue, New York.

General Electric Company, 30 Church street, New York.

General Vehicle Company, Long Island City, N. Y.

Goulds Manufacturing Company, 16 Murray street, New York.

Hurley Machinery Company, 949 Broadway, New York.

Keller Manufacturing Company, Philadelphia.

Charles L. Kleiwert Company, 39 Cortlandt street, New York.

H. Krantz Manufacturing Company, 160 Seventh avenue, Brooklyn.

Manhattan Electrical Supply Company, 17 Park Place, New York.

Murphy Electricity Rectifier Company, Rochester, New York.

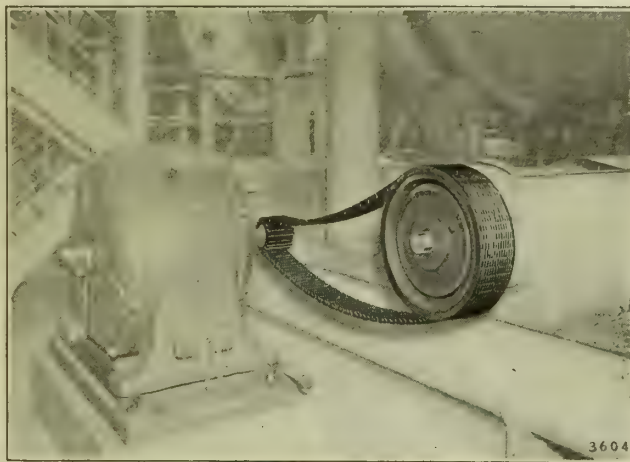
National Electric Lamp Association, 4411 Hough avenue, Cleveland, O.

Otis Elevator Company, 17 Battery Place, New York.

Pelouze Electric Heater Company, 403-13 Ohio street, Chicago.

W. P. Pressinger Company, 1 West Thirty-fourth street, New York.

Public Service Corporation of New



"MAXIMUM" SILENT CHAIN

in severe and exceptional applications, retains all the superiority it demonstrates under normal conditions.

Booklet Ab and Bulletins 50-52-57-58.

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Wm. Jessop & Sons, Ltd

MANUFACTORY SHEFFIELD, ENGLAND.

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Forty-Seventh St., and A. V. R. R., Pittsburgh, Pa.

Successors to Pittsburgh Shear Knife & Machine Company.

We are now Making a Specialty of

Forgings and Shear Knives

Of Every Description,

Your Inquiries Solicited.

HEPPENSTALL FORGE & KNIFE CO.

THE McLANAHAN DOUBLE LOG ORE WASHER

Will save all of your ore and cleanse it thoroughly. You will be surprised how much is lost in the mud and can be turned to good account in the machine.

ORE CLEANSING MACHINERY OF EVERY DESCRIPTION.

WRITE FOR CATALOG.

McLANAHAN-STONE MACHINE CO., HOLLIDAYSBURG, PA.

Jersey, Newark, N. J.

Radio Reflector Company, 1178 Broadway, New York.

Roger Williams (The Simplex Electric Heating Company), 25 West Forty-second street, New York.

Shelton Electric Company, 105 West Forty-second street, New York.

Southern Exchange Company, 97 Warren street, New York.

Stanley & Patterson, 23 Murray street, New York.

Sunray Electric Lamp Manufacturing Company, 109 West Forty-second street, New York.

Crane Company, 519 South Canal street, Chicago.

The Heany Company, 25 Broad street.

The Lansden Company, Newark, N. J.

The New York Edison Company, 55 Duane street, New York.

The Westinghouse Electric & Manufacturing Company, 165 Broadway, New York.

Tucker Electric Construction Company, 110 West Thirtieth street, New York.

United Electric Light & Power Company, 1170 Broadway, New York.

United Shoe Repairing Machine Company, 39 Warren street, New York.

Watson Stillman Company, 30 Church street, New York.

DETROIT'S BIG TUNNEL.

Unique Engineering Feat in Building of a Railroad Tube.

The tunnel now under process of construction in the Detroit river by the Michigan Central Railroad represents a unique engineering feat. Engineers are evincing the liveliest interest in the new plan of construction, and there seems to be reason to believe that this bit of construction work may revolutionize tunnel building in deep channels.

The unusual thing about this tunnel is that it was fashioned in a shipyard 50 miles away, was floated to the point where it was wanted, and then sunk into the river bed like a huge sausage casing of steel. A writer in the "Chicago Record-Herald" says:

Ordinarily the construction of a tunnel is an affair of patience. The engineers at the head of gangs of laborers burrow through the earth from the starting point on one side of the stream to their objective point on the opposite bank. Progress is pretty slow, and vast accumulations of sand and gravel removed by the shovels have to be sent to the surface in cars at a great expense of time and effort. The engineers put in charge of the construction work on the Detroit tunnel, which was to solve the problem of delays in the enormous tonnage of shipping which is now transported by ferry across the Detroit river, after a long study of the conditions, were persuaded that the ordinary method of tunnel building could not be applied there with conspicuous success.

They began to cast about for alternative methods. The first which presented itself was to furrow deep trenches

SOUTHWARK FOUNDRY & MACHINE COMPANY,

PHILADELPHIA, PA.

Our type of BLOWING ENGINES for Blast Furnaces and Bessemer Steel Works is largely used in the United States and Europe.

Built of vertical and horizontal pattern; simple and compound steam ends; and air cylinders fitted with our patented grid-iron valves which makes it possible to operate at higher speeds than with the usual form of air valve.

Catalogue upon application.

MANUFACTURERS OF
SHEARS,
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MULTIPLE PUNCHES,
DOUBLERS FOR
SHEET AND TIN MILLS,
STRAIGHTENING AND
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Power Metal Working Machinery

The CINCINNATI PUNCH AND SHEAR COMPANY,

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CHILLED
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ROLLS

Blooming, Bar, Sheet and Tin Mills Complete.

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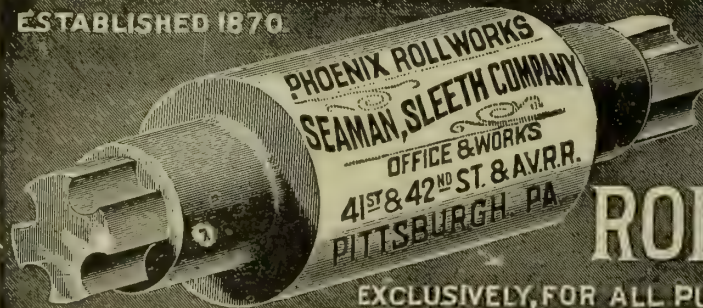
Pittsburgh Office; 823 Farmers Bank Building.

WHEELING W. VA

EVEN DEPTH CHILLED ROLLS.

LEWIS FOUNDRY AND MACHINE CO., PITTSBURGH, PA.

ESTABLISHED 1870



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EXCLUSIVELY FOR ALL PURPOSES.

SAMUEL TRETHEWEY & CO., Ltd.

ROTARY, STRAIGHT and ANGLE

Roll-Turning Tools,

Roll-Turning Plugs,

Special Blanking Dies

SOLID STEEL HEAR K NIVES

47th St., Pittsburgh, Pa

in the bed of the river and to build therein great tubes of concrete. After mature consideration the engineers abandoned this idea, but meantime the germ of the present method of tunnel construction had developed. This method was nothing more than the digging in the river bed of a deep trench into which might be sunk twin steel tubes, cast above ground and joined together at the bottom of the river, so as to make a continuous casing of steel from shore to shore which could afterward be reinforced with concrete.

The idea was simple, but revolutionary. No precedent could be cited; the very fact that it was a daring conception and promised to abridge the labor and time of construction appealed to the engineers. Then they set about to discover whether some unseen flaw in the idea might not exist. All the tests which they could devise satisfied them that it was a perfectly feasible plan, and construction work was begun three years ago on the shore approaches, which are about a mile long on each side of the river. The approaches are now completed and the last section of the subaqueous tunnel was sunk into its resting place on September 13.

Naturally, the most interesting part of the tunnel, from the technical point of view, is that which lies below the surface of the Detroit river. The steel tubes which comprise this portion were cast in the shipyards of the Great Lakes Engineering Company 50 miles away on the St. Clair river. They were twin tubes 260 feet long, 23 feet in diameter and three-eighths of an inch thick. At intervals of $11\frac{1}{2}$ feet on the exterior surface of these tubes were placed transverse diaphragms of steel, which will serve the double purpose of strengthening the tubes and affording a lodgment for the coating of asphalt which will cover the entire tunnel.

There were 10 such sections. As each of these was finished the two extremities were fitted with wooden plugs so as to render the whole watertight, and it was floated down the river to the designated point. When the engineers were ready for it, it was sunk into the river bed by the opening of valves, which allowed the water to enter and securely riveted to the section previously set. The riveting was done by divers.

After a section had been sunk and set and riveted, it was completely imbedded in a jacket of concrete four feet thick poured from immense concrete machines on the surface of the river. When the last of the concrete covering has been placed about the tubes they will be pumped out and lined with 20 inches of concrete, on which the rails will be laid for the passage of millions of tons of traffic each year.

At present the tunnel is just an im-



Not only perfectly straight, but round, true to size and highly polished.
Send for price list No. 22.

Cleveland Cranes, Preferred

They are built to perform hard work satisfactory and continually—they're "reliable" on every occasion—and can be used with the assurance that they will stand each and every test imposed and remain a profitable investment—always.

THE CLEVELAND CRANE & ~~CAR~~ CO.
— WICKLIFFE, OHIO. — **ENGINEERING CO.**

MORGAN CONTINUOUS GAS PRODUCER



"THE STANDARD
IN BOTH
EUROPE
AND THE
UNITED STATES."

DYBLIE
REVERSING
VALVES ARE
INDESTRUCTIBLE.

MORGAN CONSTRUCTION CO., :: Worcester, Mass.
European Office 52 Rue du Congres, Brussels.

mense steel tube lying on the bottom of the river and connected with the shore approaches, which will provide a gentle grade by which trains may be descend to the tunnel bed 75 feet below the surface of the river, and issue on the other side.

All the enormous traffic which has hitherto been slowly transported on squat ferries from shore to shore, will, after the opening of the tunnel, be transferred from one shore to the other by the heaviest type of electric locomotives. These locomotives are now almost ready for service, and they were chosen in order to avoid the danger from coal gases which a steam engine might occasion. Although the construction of the tunnel will mean the passing of the picturesque barges which now fill the the river, this loss to the landscape will be more than compensated for by the saving of much precious time in the transfer of freight and passengers. Where hours were often spent in the winter season in crossing the river, seven to 10 minutes will suffice after the opening of the tunnel.

AFTER WESTERN COAL.

Steel Corporation Said to Be Coveting An Indiana Railroad, Too.

Recent press dispatches from Terre Haute, Ind., say:

The mysterious inspection of the Southern Indiana Railroad system by an expert, whose name is refused to reporters, and who has been escorted by John W. Walsh, son of John R. Walsh, is believed to be explained by a report that the United States Steel Corporation is a prospective purchaser.

That H. C. Frick is getting all the coal land possible in the fields lying along the Southern Indiana, from Danville, Ill., to Terre Haute, has been known for some time. It is learned that the Steel people and the Chicago & Eastern Illinois Railroad have not been enjoying harmonious relations. The Eastern Illinois has been asking for better freight rates for coal hauled to the steel mills at South Chicago, Joliet and Waukegan. The Steel people have recently been giving the Southern Indiana line all the coal the latter could haul, and the new field being acquired will be nearer to the Southern Indiana than to the Eastern Illinois.

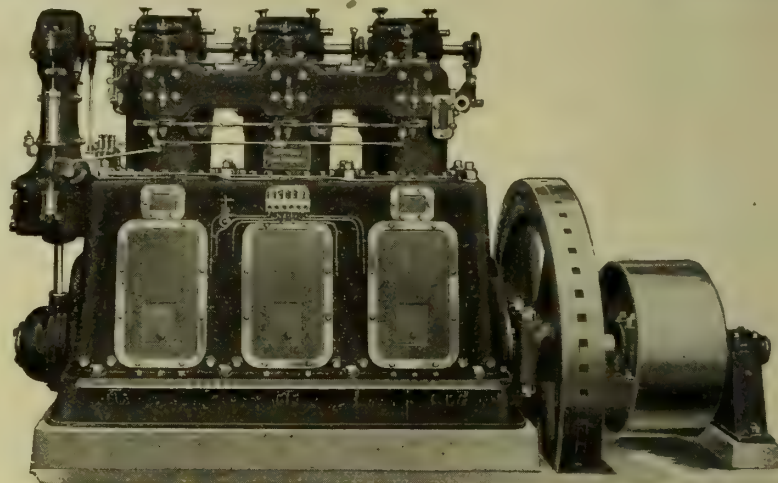
It is learned that a branch, 14 miles long, is to be built Southeast from St. Berenice, Ill., on the Southern Indiana to a point south of Clinton, Ind., which will be at the center of the combine's coal field lying along both sides of the Indiana-Illinois State line.

Pennsylvania Penalizes Corporations.

Reports from Harrisburg, Pa., say that Auditor General Young has ordered en-

WARREN GAS ENGINES

Both VERTICAL and HORIZONTAL TANDEM Types
ECONOMY and REGULATION are GUARANTEED
RELIABILITY and DURABILITY have been DEMONSTRATED
SIMPLE ACCESSIBLE

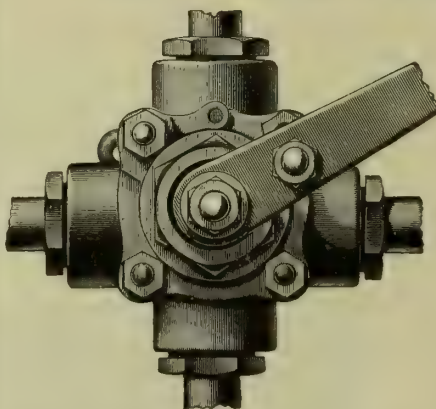


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CHAMBERSBURG OPERATING CHECK AND STOP
VALVES—LOSS ROTARY STOP VALVES

HYDRAULIC MACHINERY AND
STEAM HAMMERS.

Chambersburg Engineering
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MANNING, MAXWELL & MOORE,
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Dixon's Flake Graphite is the very finest lubricating graphite the world produces--a smooth, unctuous flake of uniform size.

Used alone or in connection with oil or grease, Dixon's Flake Graphite reduces friction, saves wear and prevents damage to friction surfaces.

Comes in large flake (No. 1 size) or fine flake (No. 2 size). No. 1 is for the heavy work, No. 2 for finer requirement. Write for free sample.

JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J.

forced collection of taxes from fully 1,000 corporations which have failed to file reports on capital stock, gross receipts and loans in his department. This means that the State will estimate the amount of tax for 1908 and prior years and add 10 per cent penalty.

All of these corporations have received notices to make reports, but failed to do so. The penalties will realize over \$100,000 alone. When the estimates are not paid the State will sue.

OVERDOING CONCRETE HOLLOW BLOCKS.

Much of the building that is going on in the West, is stimulated artificially by the vast production of hollow concrete blocks. The enormous block manufacture has been overdone, it is feared, by competition among the manufacturers of machinery for the making of this artificial stone. A responsible architect and builder declares that there are 231 manufacturers of cement machinery west of Cleveland, 90 per cent of whom were not in business four years ago, and it is estimated that these concerns have put into operation, chiefly in the middle Western States, machinery that has cost more than \$30,000,000. Of course, this must represent only a small part of the capital now invested in the production of what may be called a new building material.

An examination of the periodicals of the trade reveals not only a phenomenal production of Portland cement, the largest plants in the country being literally unable to keep up with the demand, but reveals a feverish activity in the manufacture of all kinds of machinery and devices for mixing, moulding and re-enforcing concrete according to the needs of the building business. It is obvious that much of this activity results from an overstimulation that will in time produce the inevitable costly reaction that may not only injure the speculative manufactures of machinery, but may tend, because of the dubious methods engendered in the pursuit of cheapness, to produce an unfit material that will injure the reputation of all concrete building.

It may be said that the value of the concrete hollow block as a building material depends of necessity upon the methods of manufacture. Improper aggregates in assembling the materials, imperfect mixing, a poor quality of cement or of sand, or improper methods of curing the block after manufacture are the common causes of the production of blocks unfit for building material. Thousands of such unfit blocks, nevertheless, have been used in the construction of small houses in the last few years, and as the process of disintegration more or less serious manifests itself



JEFFREY STORAGE BATTERY TRUCK

reduces the cost and facilitates the handling of materials around Industrial Plants. Let us know the approximate weight loads and length of your haul and we will determine a suitable equipment.

ELEVATING AND CONVEYING MACHINERY
FOR HANDLING ANY MATERIAL, BUILT TO SUIT ANY CONDITIONS.

See Catalog Za 81.

THE JEFFREY MFG. CO., COLUMBUS, OHIO.

C.O. BARTLETT AND SNOW CO.
MAKERS OF CLEVELAND, O. U.S.A.
DRYERS CATALOG N° 16
GRADERS CATALOG N° 27
ELEVATORS AND CONVEYORS.

To Mill Owners:

You retain a lawyer or a physician because you know nothing of their professions and because you believe they are experts. You follow their advice implicitly, confident that good results will follow their skill, judgment, knowledge and experience. They leave the fabrication of metals to you because they know nothing about it. It is the same in the electric lighting and power business. You seek economy and efficiency. Your case is for results—not methods. The solution of electrical problems is our business. We have specialized and claim to be experts. Our skill and experience are at your service free of cost. The judgment of our experts in matters relating to the proper illumination of your factory or to the installation of the most economical power will save you much annoyance and much money. Call Contract Department 3200 Grant and enlist their services.

ALLEGHENY COUNTY LIGHT CO.
435 Sixth Ave., Pittsburgh, Pa.

its tendency, of course, is to discredit this material generally. It has been amply demonstrated, however, that with small expense and with small technical skill concrete blocks can be produced that are more adaptable because of the plasticity of the material, than any kind of stone or brick.

Building Operations in Canada.

Consul-General George N. West advises the American Bureau of Manufactures that Vancouver and the surrounding country is now engaged in building on a very extensive scale; structures of all classes are in course of erection, requiring building hardware of the very best to the lowest-grade goods, according to the class of building being erected. This extensive building also causes a large demand for mechanics' tools of all descriptions. The number of building permits issued during the first six months of 1909 were 1,034; estimated value of buildings to be erected, \$3,418,195.

New Washington County Line.

Reports from Washington, Pa., say that a corps of surveyors has commenced work laying out a route for a trolley line between Washington and Bridgeville. The proposed line starting at Bridgeville and passing through Washington, will continue to Prosperity and Deel Lick and thence to Waynesburg, where it will connect with the line now being constructed to Monongahela.

Lava for Ballast.

Lava gravel from the fields, eight miles from Bend, Ore., heretofore considered useless, is to be used for ballast on the Harriman line up the Deschutes River. No blasting will be necessary, as it can be scooped up by a steam shovel and loaded on combination cars.

Damage to Buffalo Station.

The Erie's passenger station in Buffalo was very badly damaged by fire this week, and it may hasten improvements being made that have been held in abeyance for some time.

New Shops for Lehigh Valley.

Manchester, Pa., has been made the terminus of the Lehigh Valley's Buffalo division. Shops are to be built there, it is stated, and employment given to 400 men.

The steel car trade has been bidding on an inquiry for 100 industrial cars, which are for export to South America.

Try a Want or For Sale ad in the Industrial World.



Rust-Resisting Sheets

BLACK OR GALVANIZED

PRICES FROM YOUR JOBBER OR
THE STARK ROLLING MILL CO.,
CANTON, OHIO.

BAIRD MACHINERY COMPANY, MACHINE TOOLS

of all kinds for the Machine Shop, Foundry, Planing Mill, Pattern Shop, &c., &c. Machinists' Tools and Supplies.

LARGE STOCK SECOND-HAND MACHINERY.

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AGENTS: SCHUMACHER & BOYE—LATHES FROM 18" TO 48".

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MILL TRUCKS.
PITTSBURGH, - - - - - PA.

W. N. KRATZER & CO. Manufacturers STRUCTURAL STEEL WORK

Buildings, Bridges, Roof Trusses, Girders, Columns, Builders' Iron Work
Beams, Channels, Angles, Zee Bars, Etc.

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HERE IS THE SPACE
WRITE FOR THE PRICE

WIRE FENCING IN CANADA.

Big Demand in the Northwest.

In a report to the Bureau of Manufactures at Washington, Consul-General John Edward Jones, of Winnipeg, tells of an increase in the demand for wire fences in the Canadian West. He writes:

This demand is concrete evidence of the rapidity with which this section is being settled, and American manufacturers should give heed to the demand. A fence of simple and easy construction which combines cheapness with durability is the thing needed. At the present time a large majority of the fences and wires used for their construction are of American manufacture and come from Illinois. It is estimated that 5,000 tons were used this year, and a large increase is predicted for next year.

Several years ago barbed wire was a favorite fence-making material, but because of the danger to stock and difficulties in the way of handling it is rapidly being discarded. Farmers are partial to making their own fences, and for this reason wire is purchased on spools in large quantities and stretched into position. The scarcity of wood for fence posts suggests some metal substitute, preferably of stamped iron. Such a post with a concrete filling has been invented by a Winnipeg manufacturer and seems capable of supplying the want. This same manufacturer has invented a fence, which consists of a number of standards which by means of a small instrument, are fastened in position after the wires are strung, making a strong and serviceable fence. A feature of the patent is that it permits the farmer to construct a fence with varying sizes of mesh to meet his particular requirements.

The Chicago Cement Show.

The first drawing for spaces at the Third Annual Cement Show will take place October 29. The show will be held next February. Conventions of seven and probably more allied organizations will be held in Chicago while the show is in progress; among others are the following:

National Association of Cement Users, February 21-25; American Society of Engineering Contractors, February 24-26; National Builders' Supply Association, February 23-24; Illinois Society of Municipal Contractors, February 24-26; Illinois Lumber Dealers' Association, February 16-18; Illinois Masons' Supply Association, February 16-18; Interstate Mantel and Tile Dealers' Association of the United States, February 15-19.

Consul Leo. J. Kenna, of Chihuahua, reports that the State legislature of Coahuila, has ratified the contract made by Governor Miguel Cardenas, of that State, with Edward Hartman, relative to the construction of a railroad between the cities of Monclova, Coahuila, and Chihuahua. Correspondence with Mr. Hartman should be addressed in care of Governor Cardenas, who will promptly forward it.

Established 1852.

Incorporated 1901

**WM. SWINDELL & BROTHERS,
ENGINEERS AND CONTRACTORS**

Open Hearth and Crucible Steel Plants, Swindell Recuperative System for Heating and Annealing, Water Seal Gas Producers, 1400 in operation. Regenerative Heating Furnaces, Malleable and Foundry Melting Furnaces, Gas Furnace Valves, 21 in. to 36 in. Diameter,

We Build Furnace Plants of Every Description.

GERMAN NATIONAL BANK BUILDING,

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**JULIAN KENNEDY,
ENGINEER**

Cable Address.
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PITTSBURGH, Pa., U. S. A.

SAMUEL E. DUFF,

CONSULTING
DESIGNING**ENGINEER**EXAMINATIONS
REPORTS

EMPIRE BUILDING,

PITTSBURGH, PA.

**ALEX. LAUGHLIN & CO.,
Engineers & Contractors,
PITTSBURGH, PA.**

Builders of Every Description of
FURNACES AND GAS PRODUCERS
—FOR—
IRON AND STEEL WORKS.



Hand Labor and Expensive Stoking Appliances

*not necessary if you use***KIRKWOOD NATURAL GAS BURNERS.**

Your name and address on a post card puts the proof on your desk.

TATE JONES & CO., Inc.,
Pittsburg, Pa.

BLAST FURNACE CONSTRUCTION.

Engineers Sole Representatives, THE McCURE (Massicks & Crooke) Patent **Contractors**
Three Pass Fire Brick Hot Blast Stoves. Also Two Pass Stoves.

—Center Combustion Chamber—

Open-Hearth Furnaces, Heating Furnaces, Soaking Pits—All Kinds of Brick Work.

G. W. McCURE, SON & CO.,

BESSEMER BUILDING

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CENTRAL TUBE COMPANY

LEWIS BUILDING,

PITTSBURGH, PA.

Manufacturers of

WROUGHT PIPE

Eastern Representatives, Olin, Giberson & Hilands, No. 2 Rector St., New York.

VALUE OF PIG IRON OUTPUT.

Statement by Geological Survey.

The approximate value of the output of pig iron in the United States in 1908 (15,936,018 long tons), as reported by the producers to the United States Geological Survey, was \$254,321,000 f. o. b. at the furnaces. This was a decrease of \$p75,637,000, or 52.01 per cent, from the value for 1907, though the production decreased only 38.19 per cent. The average price per long ton was \$15.96, as

against \$20.56 in 1907, but the latter figure was the highest during the last two decades. These figures are taken from a report on the production of iron ores, pig iron, and steel in 1908, published as an advance chapter from "Mineral Resources of the United States, Calendar Year 1908." This report contains a map showing the distribution of iron ore in the United States, compiled by E. C. Harder, and another showing the location of blast furnaces in the United States, compiled by W. T. Thom. It is

now ready for distribution and can be had on application to the Director of the Geological Survey, Washington, D. C.

MANUFACTURING.

Carnegie, Pa. — The brick work is up to the second story on a \$50,000 brick and stone fireproof packing house, being constructed on Walnut street, for the Abbott Packing Company, by Contractor D. T. Riffle, of Pittsburgh.

Collinwood, O. — Contractor John Schmeller, 3341 Seymour avenue, S. W.,



Motor
Starting
Rheostat

We want you to drop us a line the next time you are in the market for an electric controlling device of any kind, or are confronted with some problem involving the starting, stopping or speed regulation of an electric motor.

It will cost you only a two-cent stamp to put your problem up to us, and our suggestions—based on the experience gained in nearly 20 years of work along this line—may prove of considerable value to you.

The Cutler-Hammer Mfg. Co., Milwaukee

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BOSTON: 176 Federal St. PITTSBURGH: Farmers' Bank Bldg. CLEVELAND: Schofield Bldg.
SAN FRANCISCO: Otis & Squires 155 New Montgomery St.



Machine
Tool
Controller



The Production of UNIVERSAL PORTLAND CEMENT

Year.	Output of Universal Portland Cement-bbls.	Percentage of total American output of Port- land Cement.
1900	32,000	0.38%
1901	164,000	1.29%
1902	319,000	1.85%
1903	463,000	2.08%
1904	473,000	1.78%
1905	1,735,000	4.92%
1906	2,076,000	4.55%
1907	2,129,000	4.36%
1908	4,535,000	8.89%
1909	*6,000,000	

*Estimated.

Additional capacity now under construction will give us an output of 8,000,000 barrels for 1910.

UNIVERSAL
Portland Cement Company
CHICAGO - - PITTSBURG

The Connellsville Manufacturing & Mine Supply Co., INC. Connellsville, Penn'a.

—MANUFACTURERS OF—

**Pumping and Hoisting Machinery,
Mine Fans, Air Compressors, Etc.**

—COMPLETE EQUIPMENTS—

For Coal and Coke Works.

Cleveland, has started the erection of a one-story brick factory building, for John A. Kling and C. F. Miller Company, Hippodrome building, Cleveland, to cost \$15,000.

Queens Junction, Pa. — Edward Everett, 506 Commonwealth building, Pittsburgh, was awarded the contract for erecting a one-story corrugated iron manufacturing plant, for the S. H. Roberts Boiler & Tank Company, Commonwealth building, Pittsburgh.

Collinwood, O. — Foundations have been started for a \$25,000 brick and frame factory building, to be erected for John A. Kling and C. A. Miller Company, Cleveland, by the Julius Firschow Contracting Company, of Cleveland.

Port Vue, Pa. — Foundations have been started for a brick, corrugated iron and steel tin plate plant addition, to be constructed for the McKeesport Tin Plate Company, at a cost of \$500,000.

Princeton, W. Va. — John P. Pettyjohn & Company, of Lynchburg, Va., received the contract for erecting a brick and steel railroad shop buildings, for the Virginia Railroad Company.

Ironton, O. — Architects T. S. Murray & Son, have plans for a four-story shoe factory, to be built for the Excelsior Shoe Company. It will be of brick and mill construction and measure 44x125 feet.

Zanesville, O. — The American Encaustic Tiling Company, is building an addition to its plant 87x160 feet, and will build four additional kilns.

Wellsville, O. — The Menough Foundry Company will erect new foundry, 150x40 feet, to replace structure recently destroyed by fire.

Zanesville, O. — The Orr Machine & Foundry Company has been incorporated with a capital stock of \$10,000 by Harry T. Orr, Simon Linser, Sr., Clyde Reasoner and Charles Dieterly. A new foundry will be erected on the site of the old rolling mill.

Wabash, Ind. — A new machine company has been formed with a capital stock of \$30,000 by Charles Latchem and others, to erect a plant 40x200 feet, to cost \$13,000. Architect William Stewart is preparing the plans.

Evansville, Ind. — The International Steel & Iron Construction Company will erect a plant, to have a floor space of 94,000 feet, to manufacture steel scaffolding, to be used in the building of skyscrapers.

Cleveland, O. — Foundations have been started for a three-story and reinforced concrete factory addition, to be erected on Jennings road, for the Cleveland Tanning Company. General contract was awarded to Bolton & Pratt, Columbia block, and carpentry to F. D. Stevenson, Builders' Exchange.

Dayton, O. — Contractors F. A. Requarth Company, Sears and Monument streets, have started work on constructing a \$25,000 frame freight station on First and Welter streets, for the Erie Railroad Company.

London, O. — Foundations have been started for a two-story concrete block cold storage plant, to be erected for the London Produce & Cold Storage Company, at a cost of \$15,000.

Newport, Ky. — Architect Jacob Glick, 624 Monmouth street, is taking bids on erecting a two-story brick slaughter house on Monmouth street, for Becker Brothers. Cost \$10,000.

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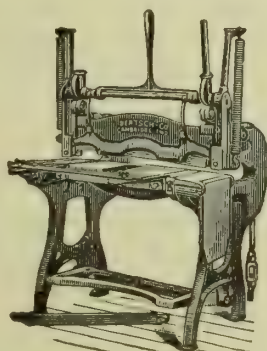
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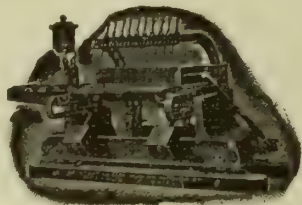
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Economical Methods for Metal Conformation.
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Difficult Shapes a Specialty.
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COAL**

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GENERAL OFFICES, PITTSBURG, PA.

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DUQUESNE RAIL JOINTS

Double track installations of Carnegie Steel Ties, Rails and Duquesne Rail Joints.

The maintenance cost will be unnoticeable for years.

THE POINT OF VIEW OF THE PRACTICAL MAN

ONE OF THE STRONG POINTS OF

THE "KEWANEE UNION"

is the fact that it appeals to the practical man. For example: One of our representatives recently visited a Southern City, and the following is taken from his reports:

"Called at Shops to see the Master Mechanic, but he was out of town. Saw the General Foreman regarding 'Kewanee' Unions; he is very much pleased and states they are superior to any others; says they are very satisfactory in every way. They had made heavy brass unions in their shops, but they were a failure and very expensive. The General Foreman was along with me and he is very anxious to get 'Kewanee' Unions for use because all others rust up and they have to ruin them to take apart. The storekeeper also says the 'Kewanee' Union is all right. Will see the Master Mechanic another time. Everyone who handles 'Kewanee' Unions speaks of them as THE UNION."

"The Master Mechanic was at Atlantic City; saw his chief clerk, however, who advised they were ordered to use 'Kewanee' Unions; he stated their workmen kicked for 'Kewanee' Unions but they had to use others at present on hand. One of the mechanics who was in the office and overheard the conversation, told the chief clerk; it would be a (—) sight cheaper to throw all the other unions in the scrap heap, as the 'Kewanee' Union never leaks and does not have to be replaced."

The points of the "Kewanee" Union which appeal to the practical users are as follows:

- 1 Brass to iron thread connection at the ring—will not rust together, because brass to iron will not corrode.
- 2 Brass to iron ball joint seat—no gasket is necessary for the joint of a hard and soft metal makes an excellent and sure seal. Even if pipe is out of line a tight joint is still obtainable.
- 3 Every "Kewanee" Union is tested before leaving the factory with 100 lbs. compressed air under water, which is the most rigid, practical test.
- 4 The "Kewanee" Union has only three solid parts; it is simple, compact and effective.

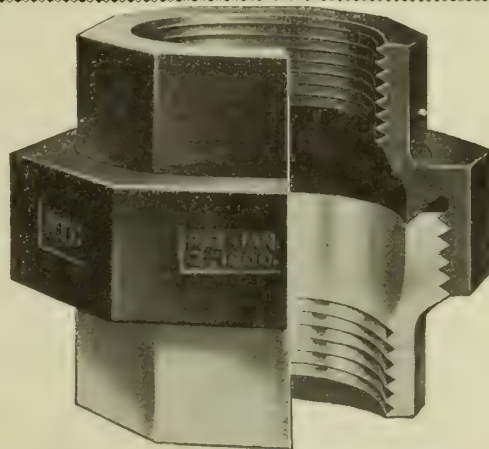
It is now being used by many of the largest railroads and manufacturers in the country. If you are already using the union no further words are necessary; if, however, you are not, we will be glad to send you further information on request.

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..... Pittsburgh.

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.....Milwaukee, Wis.

CRANES—LOCOMOTIVE.

Brown Hoisting Mach. Co..Cleveland, O.
Browning Engineering Co.

.....Cleveland, O.
Cleveland Crane & Eng. Co.....

.....Wickliffe, O.
H. J. KoontzPittsburgh.

Industrial WorksBay City, Mich.
Northern Eng. Works ..Detroit, Mich.

CRANES & HOISTING MACHINERY
Baird Machinery Co.Pittsburgh.

Browning Engineering Co.
.....Cleveland, O.

Cleveland Crane & Eng. Co.....
.....Wickliffe, O.

Industrial WorksBay City, Mich.
H. J. KoontzPittsburgh.

Link-Belt CompanyPhiladelphia.
Northern Engineering Works

.....Detroit, Mich.

CRUCIBLES.

Jos. Dixon Crucible Co...Jersey City.

CRUCIBLE STEEL.

McKenna Bros. Brass Co...Pittsburgh.
Wm. Jessop & Sons, Ltd...New York.

CUPOLA BLOCKS.

Stowe-Fuller Co.Cleveland, O.

CYLINDERS.

Mesta Machine Co.Pittsburgh
Wm. B. Scaife & Sons Co..Pittsburgh.

COUPLINGS.

National Tube Co.Pittsburgh

COUPLINGS (Flexible).

Electric Con. & Mfg. Co..Cleveland, O.
CEMENT-HANDLING MACHINERY

Link-Belt CompanyPhiladelphia.

CHAINS.

Jones & Laughlin Steel Co..Pittsburgh.
Link-Belt CompanyPhiladelphia.

**CHAINS (Dodge, Ewart, Ley, Monobar,
Etc.).**

Link-Belt CompanyPhiladelphia.

CHAIN DRIVES.

Link-Belt CompanyPhiladelphia.

CHAIN HOISTS.

Link-Belt CompanyPhiladelphia.

CHAIN SLINGS.

Link-Belt CompanyPhiladelphia.

CONVEYORS (Belt).

Link-Belt CompanyPhiladelphia.

CONVEYORS (Flight).

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt CompanyPhiladelphia.

CONVEYORS (Screw).

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt CompanyPhiladelphia.

CHANNELS.

Jones & Laughlin Steel Co..Pittsburgh.
W. N. Kratzer Co.Pittsburgh.

W. G. McKenney & Co.Pittsburgh.
Wm. B. Scaife & Sons Co..Pittsburgh.

**COAL HAULING TIPPLES, MINING,
WASHING & CRUSHING PLANTS.**
C. O. Bartlett & Snow Co., Cleveland, O.
Jeffrey Manufacturing Co., Columbus, O.

**COCKS (Iron Body and "High-Duty-
Metal")**

National Tube Co.....Pittsburgh, Pa.

CLUTCH (Magnetic.)

Cutler-Hammer Clutch Co., The...
.....Milwaukee, Wis.

COKE.

Bessemer Coke Co.Pittsburgh.

Reed F. Blair & Co.Pittsburgh.

Jamison Coal & Coke Co.Pittsburgh

McKeefrey & Co.Leetonia, O.

Pittsburgh-Buffalo Co.Pittsburgh.

Rogers, Brown & Co.Cincinnati, O.

L. & R. Wister & Co.Philadelphia.

Washington Coal & Coke Co..Pittsburgh.

COLUMNS.

Jones & Laughlin Steel Co..Pittsburgh.

W. N. Kratzer Co.Pittsburgh.

Meehan Boiler & Con. Co. Lowellville, O.

Wm. B. Scaife & Sons Co..Pittsburgh.

COLD DRAWN STEEL SHAFTING

AND SHAPES.

Cumberland Steel Co..Cumberland, Md.

CONDENSORS.

Mesta Machine Co.Pittsburgh.

Southwark Foundry & Machine Co.

.....Philadelphia.

Wickes BrothersPittsburgh.

CONSULTING ENGINEER.

Brown Engineering Co.Pittsburgh.

Duff, Samuel E.Pittsburgh.

Kennedy, JulianPittsburgh.

CONTRACT ROLL TURNING.

The Heinle CompanyPittsburgh.

CONTROLLERS (Electric.)

Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

CONVEYORS & ELEVATORS.

C. O. Bartlett & Snow Co..Cleveland, O.

Link-Belt CompanyPhiladelphia.

Jeffrey Manufacturing Co..Columbus, O.

COPING MACHINES.

Cleveland Crane & Eng. Co.,Wickliffe, O.

COUPLINGS (Wrought.)

Central Tube CompanyPittsburgh.

COUPLINGS (Magnetic.)

Cutler-Hammer Clutch Co., The...
.....Milwaukee, Wis.

CLAY MACHINERY.

American Clay Working Mach. Co.

.....Bucyrus, O.

Connellsville Mfg. & Mine Supply Co.

.....Connellsville, Pa.

Philips & McLaren Co.Pittsburgh.

Wickes BrothersPittsburgh.

COUPLING NUTS.

Cleveland Crane & Eng. Co.,Wickliffe, O.

CUPOLAS.

Northern Eng. Works ...Detroit, Mich.

Riter-Conley Mfg. Co.Pittsburgh.

CUPOLA BLOCKS.

United Fire Brick Co..Uniontown, Pa.

DISC BRAKES.

Cutler-Hammer Clutch Co., The ...
.....Milwaukee, Wis.

DITCHERS.

Browning Eng. Co.Cleveland, O.

DIES.

Cleveland Crane & Eng. Co.,Wickliffe, O.

DRIFT PINS.

Cleveland Crane & Eng. Co.,Wickliffe, O.

DOVETAIL ROLLS.

The Heinle CompanyPittsburgh.

DOUBLERS.

Cincinnati Punch & Shear Com-
panyCincinnati, O.

DIRECT MOTOR DRIVES.

Crocker-Wheeler Co....Ampere, N. J.

DREDGING MACHINERY.

C. O. Bartlett & Snow Co..Cleveland, O.

Jeffrey Manufacturing Co..Columbus, O.

DRIVE WELL POINTS AND WELL

SUPPLIES.

National Tube Co.....Pittsburgh, Pa.

DREDGE CHAINS.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt CompanyPhiladelphia.

DREDGES.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt CompanyPhiladelphia.

DROP HAMMERS.

Chambersburg Engineering Com-
panyChambersburg, Pa.

DYNAMO BRUSHES.

Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

DRAWINGS.

Brown Engineering Co.Pittsburgh.

DRIVE CHAIN.

Link-Belt CompanyPhiladelphia.

DYNAMOS & MOTORS.

Crocker-Wheeler Co....Ampere, N. J.
H. J. KoontzPittsburgh.

Wickes BrothersPittsburgh.

ECCENTRIC ROLLS.

The Heinle CompanyPittsburgh.

ELECTRIC HOISTS.

Cleveland Crane & Eng. Co. Wickliffe, O

ELECTRIC FAULT FINDER.

Electric Con. & Mfg. Co..Cleveland, O.

ELECTRIC LIGHTING MACHINRY.

Crocker-Wheeler Co....Ampere, N. J.

Southwark Foundry & Machine Co.

.....Philadelphia.

Wickes BrothersPittsburgh.

ELEVATOR CONTROLLERS AND

ACCESSORIES.

Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

ELEVATORS.

Jeffrey Manufacturing Co..Columbus, O.

Otis Elevator Co.Pittsburgh.

Scaife Fdry & Mach. Co....Pittsburgh.

ENGINEERS.

Alex Laughlin & Co.Pittsburgh.

Brown Engineering Co.Pittsburgh.

Chambersburg Engineering Co.....

.....Chambersburg, Pa.

Duff, Samuel E.Pittsburgh.

Link-Belt CompanyPhiladelphia.

Julian KennedyPittsburgh.

G. W. McClure Son & Co. ...Pittsburgh.

Morgan Construction Co.

.....Worcester, Mass.

Smythe, The S. R. Co....Pittsburgh.

Wm. B. Scaife & Sons Co..Pittsburgh.

United Eng. & Fdry Co..Pittsburgh, Pa.

William Swindell & Bro. ...Pittsburgh.

ENGINEERS—INSPECTING.

Gulick-Henderson & Co....Pittsburgh.

ENGINEERS—LABORATORY.

Gulick-Henderson & Co....Pittsburgh.

ENGINEERS (Mechanical).

Link-Belt CompanyPhiladelphia.

EQUALIZING GEARS.

Link-Belt CompanyPhiladelphia.

ENGINES—STEAM.

Connellsville Mfg. & Mine Supply Co.

.....Connellsville, Pa.

H. J. KoontzPittsburgh.

Mackintosh, Hemphill & Co..Pittsburgh.

Mesta Machine Co.Pittsburgh.

Southwark Foundry & Machine Co.

.....Philadelphia

Wickes BrothersPittsburgh.

EXHAUST PIPE HEADS.

Direct Separator Co.Syracuse, N. Y.

FAN REGULATORS.

Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

FIELD REGULATORS.

Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

FIRE PUMP STARTERS.

Cutler-Hammer Mfg. Co., The
.....Milwaukee, Wis.

FLANGING CLAMPS.

Chambersburg Engineering Company Chambersburg, Pa.
Cleveland Crane & Eng. Co., Wickliffe, O.

FLANGE COUPLINGS.

Cumberland Steel Co., Cumberland, Md.

FLIGHT CONVEYORS.

Link-Belt Company Philadelphia.

FORGINGS.

Cleveland Crane & Eng. Co., Wickliffe, O.
W. N. Kratzer & Co., Pittsburgh.
Wm. B. Scaife & Sons Co., Pittsburgh.
Heppenstall Forge & Knife Co., Pittsburgh.

Mesta Machine Co., Pittsburgh.

FLOAT SWITCHES.

Cutler-Hammer Mfg. Co., The Milwaukee, Wis.

FORGING PRESSES.

Chambersburg Engineering Company Chambersburg, Pa.
United Eng. & Fdry Co., Pittsburgh, Pa.

FOUNDRY EQUIPMENTS.

Baird Machinery Co., Pittsburgh.
Cleveland Crane & Eng. Co., Wickliffe, O.
Meehan Boiler & Con. Co., Lowellville, O.
Northern Engineering Works Detroit, Mich.

Wickes Brothers Pittsburgh.

FIREBRICK AND CLAY.

Bickford Fire Brick Co., Pittsburgh.
Clearfield Fire Brick Co., Clearfield, Pa.
Dover Fire Brick Co., Cleveland, O.
Kier Fire Brick Co., Pittsburgh.
Pittsburgh-Buffalo Co., Pittsburgh.
Stuart Fire Brick Company, Pittsburgh.
Sharon Fire Brick Co., Sharon, Pa.
Jos. Soisson Fire Brick Co., Connellsville, Pa.

Sandy Ridge Fire Brick Co., Sandy Ridge, Pa.

The Stowe-Fuller Co., Cleveland, O.

United Fire Brick Co., Pittsburgh.

W. H. Wynn & Co., West Decatur, Pa.

FITTINGS (Electric Crane).

Electric Con. & Mfg. Co., Cleveland, O.

FITTINGS (Malleable and Cast Iron.)

National Tube Co., Pittsburgh, Pa.

FIRE ESCAPES.

W. N. Kratzer & Co., Pittsburgh.

W. G. McKenney & Co., Pittsburgh.

FIREPROOFING.

W. N. Kratzer & Co., Pittsburgh.

FEED WATER HEATERS, FILTERS

AND PURIFIERS.

H. J. Koontz Pittsburgh.

Petroleum Iron Works Sharon, Pa.

Wm. B. Scaife & Sons Co., Pittsburgh.

Wickes Brothers Pittsburgh.

FURNACE BUILDERS.

Julian Kennedy Pittsburgh.

Alex Laughlin & Co., Pittsburgh.

Morgan Con. Co., Worcester, Mass.

G. W. McClure Son & Co., Pittsburgh.

Wm. B. Scaife & Sons Co., Pittsburgh.

The S. R. Smythe Co., Pittsburgh.

William Swindell & Bro., Pittsburgh.

Tate, Jones & Co., Inc., Pittsburgh.

FLAG STAFFS.

National Tube Co., Pittsburgh, Pa.

FLANGES (Cast and Malleable.)

National Tube Co., Pittsburgh.

FRICTION CLUTCHES.

Link-Belt Company Philadelphia.

Wickes Brothers Pittsburgh.

GALVANIZED SHEETS.

American Sheet & Tin Plate Company Pittsburgh.

McCullough Iron Co., Wilmington, Del.

GAS BURNERS.

Tate, Jones & Co., Inc., Pittsburgh.

GAS PRODUCERS.

Alex Laughlin & Co., Pittsburgh.

Morgan Con. Co., Worcester, Mass.

Riter-Conley Mfg. Co., Pittsburgh.

Struthers-Wells Co., Warren, Pa.

The S. R. Smythe Co., Pittsburgh.

William Swindell & Bro., Pittsburgh.

GAS ENGINES.

Mesta Machine Co., Pittsburgh.

Struthers-Wells Co., Warren, Pa.

Wickes Brothers Pittsburgh.

GATE SHEARS.

Cincinnati Punch & Shear Co., Cincinnati

Cleveland Crane & Eng. Co., Wickliffe, O.

GEARS.

Taylor-Wilson Mfg. Co., Pittsburgh.

Mesta Machine Co., Pittsburgh.

GEARING (Bevel, Mitre, Spur, etc.)

Link-Belt Company Philadelphia.

GIRDERS.

Jones & Laughlin Steel Co., Pittsburgh.

Meehan Boiler & Con. Co., Lowellville, O.

W. N. Kratzer Co., Pittsburgh.

Wm. B. Scaife & Sons Co., Pittsburgh.

GAS AND AIR VALVES.

Taylor-Wilson Mfg. Co., Pittsburgh.

GRAPHITE.

Jos. Dixon Crucible Co., Jersey City

GRAY IRON CASTINGS.

Cleveland Crane & Eng. Co., Wickliffe, O.

GREASE.

Jos. Dixon Crucible Co., Jersey City

GUILLOTINE SHEARS.

Cleveland Crane & Eng. Co., Wickliffe, O.

GENERATORS.

Crocker-Wheeler Co., Ampere, N. J.

Wickes Brothers Pittsburgh.

HEAD FRAMES.

Riter-Conley Mfg. Co., Pittsburgh.

HIGH SPEED PUNCHES.

Cleveland Crane & Eng. Co., Wickliffe, O.

HOISTING ENGINES.

Otis Elevator Co., Pittsburgh.

Wickes Brothers Pittsburgh.

HORIZONTAL DRILLS.

Baird Machinery Co., Pittsburgh.

HORIZONTAL PUNCHES.

Cincinnati Punch & Shear Co., Cincinnati

Cleveland Crane & Eng. Co., Wickliffe, O.

HOT METAL CARS.

Meehan Boiler & Con. Co., Lowellville, O.

HOT BLAST STOVES.

G. W. McClure Son & Co., Pittsburgh.

HYDRAULIC MACHINERY.

Baird Machinery Co., Pittsburgh.

Chambersburg Engineering Co., Chambersburg, Pa.

Lewis Fdry. & Machine Co., Pittsburgh.

Mesta Machine Co., Pittsburgh.

Scaife Fdry. & Machine Co., Pittsburgh.

HYDRAULIC VALVES AND FITTINGS.

Chambersburg Engineering Company Chambersburg, Pa.

National Tube Co., Pittsburgh.

HYDRAULIC PUMPS.

Chambersburg Engineering Company Chambersburg, Pa.

Wickes Brothers Pittsburgh.

INCORPORATING.

The Argus Corporation Pittsburgh.

INDUSTRIAL RAILWAYS.

Link-Belt Company Philadelphia.

IGNITION BATTERY RHEOSTATS.

Cutler-Hammer Mfg. Co., The Milwaukee, Wis.

INSPECTION.

The Heinle Company Pittsburgh.

Gulick-Henderson & Co., Pittsburgh.

IRON FENCING.

W. N. Kratzer & Co., Pittsburgh.

IRON ROOFS & BUILDINGS.

W. N. Kratzer & Co., Pittsburgh.

Wm. B. Scaife & Sons Co., Pittsburgh.

Riter-Conley Mfg. Co., Pittsburgh.

IRON & STEEL BARS.

W. G. McKenney & Co., Pittsburgh.

"KEWANEE" UNIONS & SPECIALTIES.

National Tube Co., Pittsburgh, Pa.

LABORATORY ORE GRINDERS.

McKenna Bros. Brass Co., Pittsburgh.

LADLES.

Meehan Boiler & Con. Co., Lowellville, O.

Petroleum Iron Works Sharon, Pa.

LATHES.

Baird Machinery Co., Pittsburgh.

Wickes Brothers Pittsburgh.

LIFTING MAGNETS.

Browning Eng. Co., Cleveland, O.

Cutler-Hammer Clutch Co., The Milwaukee, Wis.

LIMIT SWITCHES.

Cutler-Hammer Mfg. Co., The Milwaukee, Wis.

LINK-BELTING.

Jeffrey Manufacturing Co., Columbus, O.

Link-Belt Company Philadelphia.

LOCOMOTIVE CRANES.

Browning Eng. Co., Cleveland, O.

Industrial Works Bay City, Mich.

Wickes Brothers Pittsburgh.

LINK-BELT (Original "Ewart").

Link-Belt Company Philadelphia.

LUBRICANTS.

Jos. Dixon Crucible Co., Jersey City.

MACHINE TOOL CONTROLLERS.

Cutler-Hammer Mfg. Co., The Milwaukee, Wis.

MAGNETIC CLUTCHES.

Cutler-Hammer Clutch Co., The Milwaukee, Wis.

MAGNETIC SEPARATORS.

Cutler-Hammer Clutch Co., The Milwaukee, Wis.

MACHINE TOOLS.

Baird Machinery Co., Pittsburgh.

Wickes Brothers Pittsburgh.

H. J. Koontz Pittsburgh.

MACHINE BOLTS.

Riter-Conley Mfg. Co., Pittsburgh.

MACHINISTS.

Link-Belt Company Philadelphia.

MAGNETS (Electric Lifting.)

Cutler-Hammer Clutch Co., The Milwaukee, Wis.

MAGNETS (Electric Lifting.)

Electric Con. & Mfg. Co., Cleveland, O.

MAGNESIA BRICK.

Stowe-Fuller Co., Cleveland, O.

MALLEABLE CASTINGS.

Jeffrey Manufacturing Co., Columbus, O.

MASTER SWITCHES.

Cutler-Hammer Mfg. Co., The Milwaukee, Wis.

METAL STAMPING & FORMING.

Avery Stamping Co., Cleveland, O.

METALLURGISTS.

Gulick-Henderson & Co., Pittsburgh.

METAL CONFORMATION.

The Heinle Co., Pittsburgh.

MILLING MACHINES.

Baird Machinery Co., Pittsburgh.

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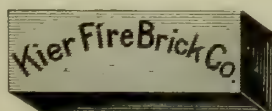
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First Quality Hearth and No. 2 Brick
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First Quality Clay and
SILICA FIRE BRICK.

Office and Works: SHARON PA.

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Cincinnati Punch & Shear Company Cincinnati, O.
METAL WORKING MACHINERY.

Cincinnati Punch & Shear Company Cincinnati, O.

MINING MACHINERY & SUPPLIES

C. O. Bartlett & Snow Co. Cleveland, O.
 Connellsville Mfg. & Mine Supply Co. Connellsville, Pa.
 Jeffrey Manufacturing Co. Columbus, O.
 Meehan Boiler & Con. Co. Lowellville, O.
 Phillips Mine & Mill Supply Co. Pittsburgh.
 Scaife Fdry. & Machine Co. Pittsburgh.
 Wickes Brothers Pittsburgh.

MOTORS.

Crocker-Wheeler Co. Ampere, N. J.
 Riter-Conley Mfg. Co. Pittsburgh.
 Wickes Brothers Pittsburgh.

MULTIPLE PUNCHES.

Cincinnati Punch & Shear Co., Cincinnati
 Cleveland Crane & Eng. Co., Wickliffe, O.

NAVY APPARATUS.

Cutler-Hammer Mfg. Co., The Milwaukee, Wis.

NIPPLES (Wrought.)

Central Tube Company Pittsburgh.

OIL BURNERS.

Tate, Jones & Co., Inc. Pittsburgh.

ORE CARS.

Jeffrey Manufacturing Co. Columbus, O.

ORE & ROCK CRUSHERS.

Jeffrey Manufacturing Co. Columbus, O.
 McLanahan & Stone, Hollidaysburg, Pa.
 Phillips & McLaren Co. Pittsburgh.
 Wickes Brothers Pittsburgh.

ORE HANDLING MACHINERY.

Brown Hoisting Mach. Co., Cleveland, O.
 C. O. Bartlett & Snow Co., Cleveland, O.
 Jeffrey Manufacturing Co., Columbus, O.
 Link-Belt Company Philadelphia.

ORE CONCENTRATORS & SEPARATORS.

McLanahan & Stone, Hollidaysburg, Pa.

PATENTS.

J. M. Nesbit Pittsburgh.
 Siggers & Siggers .. Washington, D. C.

PAINT.

Jos. Dixon Crucible Co. Jersey City.

"PECK" CARRIERS.

Link-Belt Company Philadelphia.

PIPE COILS.

National Tube Co. Pittsburgh.

PIG METAL, ORES, &c.

Columbus Iron & Steel Co. Columbus.
 McKeefrey & Co. Leetonia, O.
 Rogers, Brown & Co. Cincinnati, O.
 L. & R. Wister & Co. Philadelphia.

PENSTOCKS.

Riter-Conley Mfg. Co. Pittsburgh.

PIPE MILL MACHINERY.

Taylor-Wilson Mfg. Co. Pittsburgh.

PIPE JOINT COMPOUND.

Jos. Dixon Crucible Co. Jersey City.

PILE DRIVERS.

Industrial Works Bay City, Mich.

PILLAR CRANES.

Industrial Works Bay City, Mich.

PIPES (RIVETED STEEL).

Riter-Conley Mfg. Co. Pittsburgh.

PIPE & PIPE FITTINGS.

Central Tube Company Pittsburgh.
 National Tube Co. Pittsburgh, Pa.
 U. S. Cast Iron & Pipe Fdry Co. Scottsdale, Pa.
 Wickes Brothers Pittsburgh.

PLATE GLASS MACHINERY.

Rosedale Fdry & Mach. Co. Pittsburgh.

PLATE WORKS.

Meehan Boiler & Con. Co. Lowellville, O.
 Petroleum Iron Works, Washington, Pa.
 Riter-Conley Mfg. Co. Pittsburgh.
 Struthers-Wells Co. Warren, Pa.

PLATE PLANERS.

Cleveland Crane & Eng. Co., Wickliffe, O.

POLES (Tubing Steel.)

National Tube Co. Pittsburgh, Pa.

POWER PLANTS.

Struthers-Wells Co. Warren, Pa.
 Mesta Machine Co. Pittsburgh.
 Wickes Brothers Pittsburgh.

PNEUMATIC TOOLS.

Connellsville Mfg. & Mine Supply Co. Connellsville, Pa.
 H. J. Koontz Pittsburgh.

PRESSES—DRILL & DROP.

Baird Machinery Co. Pittsburgh.

PRESSURE REGULATORS.

Cutler-Hammer Mfg. Co., The Milwaukee, Wis.

PROSPECTUSES PREPARED.

The Argus Corporation Pittsburgh.

PUMP CONTROLLERS.

Cutler-Hammer Mfg. Co., The Milwaukee, Wis.

PULLEYS AND CLUTCHES.

Baird Machinery Co. Pittsburgh.
 Jeffrey Manufacturing Co., Columbus, O.
 Jones & Laughlin Steel Co., Pittsburgh.
 Mesta Machine Co. Pittsburgh.
 Wickes Brothers Pittsburgh.

PUNCHES.

Cincinnati Punch & Shear Company Cincinnati, O.
 Cleveland Crane & Eng. Co., Wickliffe, O.
 United Eng. & Fdry Co., Pittsburgh, Pa.

PUMPS.

Hall Steam Pump Co. Pittsburgh
 Mesta Machine Co. Pittsburgh
 Wickes Brothers Pittsburgh

PUNCH HOLDERS.

Cleveland Crane & Eng. Co., Wickliffe, O.

QUARRY MACHINERY.

Browning Eng. Co. Cleveland, O.
 Wickes Brothers Pittsburgh.
 Connellsville Mfg. & Mine Supply Co. Connellsville, Pa.
 Link-Belt Company Philadelphia.
 Phillips Mine & Mill Supply Co. Pittsburgh.
 Scaife Fdry. & Machine Co., Pittsburgh.

REMOTE CONTROL APPARATUS.

Cutler-Hammer Mfg. Co., The Milwaukee, Wis.

RIVET SETS.

Cleveland Crane & Eng. Co., Wickliffe, O.

RADIATORS.

National Tube Co. Pittsburgh, Pa.

RADIATORS (Staggered Tube-Wrought.)

National Tube Co. Pittsburgh.

RECIPROCATING CONVEYORS.

Jeffrey Manufacturing Co., Columbus, O.
 Link-Belt Company Philadelphia.

RESISTANCE GRIDS.

Cutler-Hammer Mfg. Co., The Milwaukee, Wis.

RESISTANCE UNITS.

Cutler-Hammer Mfg. Co., The Milwaukee, Wis.

"RENOLD" SILENT CHAIN.

Link-Belt Company Philadelphia.

ROPE DRIVES.

Link-Belt Company Philadelphia.

RELAYING RAILS.

J. B. Jones & Co. Allegheny, Pa.
 Richardson & Co. Pittsburgh.

RIVETERS.

Baird Machinery Co. Pittsburgh.
 Chambersburg Engineering Co. Chambersburg, Pa.

RIVETED PIPE.

Meehan Boiler & Con. Co., Lowellville, O.
 Petroleum Iron Works, Washington, Pa.
 Wm. B. Scaife & Sons Co., Pittsburgh.
 Struthers-Wells Co. Warren, Pa.

RADIAL DRILLS.

Cleveland Crane & Eng. Co., Wickliffe, O.

ROOF TRUSSES.

W. N. Kratzer & Co. Pittsburgh.
 Wm. B. Scaife & Sons Co., Pittsburgh.

ROOFING AND SIDING.

American Sheet & Tin Plate Company Pittsburgh.

ROOFING PAINT

Jos. Dixon Crucible Co., Jersey City.

REVERSING ENGINES.

Mesta Machine Co. Pittsburgh.
 Otis Elevator Co. Pittsburgh.
 Wickes Brothers Pittsburgh.

ROLL ALTERATIONS.

The Heinle Company Pittsburgh.

ROLL DESIGNERS.

The Heinle Company Pittsburgh.
 United Eng. & Fdry Co., Pittsburgh, Pa.

ROLL LATHES.

Lewis Fdry. & Machine Co., Pittsburgh
 Mesta Machine Co. Pittsburgh.
 Scaife Fdry. & Machine Co., Pittsburgh.
 Seaman-Sleeth Co., Pittsburgh.
 United Eng. & Fdry Co., Pittsburgh, Pa.
 Wickes Brothers Pittsburgh.

ROLLING MILL MACHINERY.

Cincinnati Punch & Shear Co., Cincinnati
 Crocker-Wheeler Co. Ampere, N. J.
 Heppenstall Forge & Knife Co., Pittsburgh.

Lewis Fdry. & Machine Co., Pittsburgh

Mackintosh, Hemphill & Co., Pittsburgh.

Mesta Machine Co. Pittsburgh.

Morgan Construction Co. Worcester, Mass.

McLanahan & Stone, Hollidaysburg, Pa

Phillips & McLaren Co., Pittsburgh.

Scaife Fdry. & Mach. Co., Pittsburgh.

United Eng. & Fdry Co., Pittsburgh, Pa.

Wm. B. Scaife & Sons Co., Pittsburgh.

Wheeling Mold & Foundry Co., Wheeling, W. Va.

Wickes Brothers Pittsburgh.

ROLLS (Boiler or Bending.)

Cincinnati Punch & Shear Co., Cincinnati

ROLL TURNERS.

The Heinle Company Pittsburgh.

ROLL TURNING TOOLS.

Heppenstall Forge & Knife Co., Pittsburgh.

Samuel Trethewey & Co., Pittsburgh.

ROPE COATING.

C. O. Bartlett & Snow Co., Cleveland, O.

ROPE TRANSMISSION.

Jones & Laughlin Steel Co., Pittsburgh
 Link-Belt Company Philadelphia.
 Mesta Machine Co. Pittsburgh.
 C. O. Bartlett & Snow Co., Cleveland, O.

ROTARY PLANERS.

Cleveland Crane & Eng. Co., Wickliffe, O.

SAFETY SET COLLARS.

Cumberland Steel Co., Cumberland, Md.

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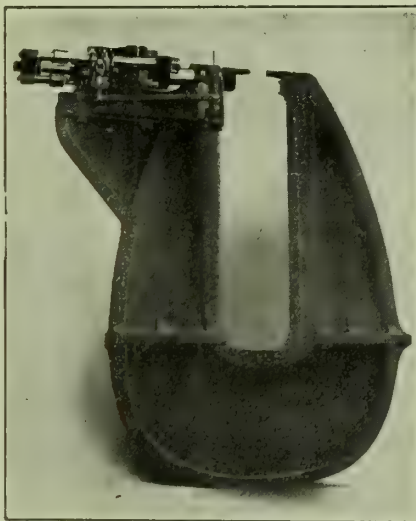


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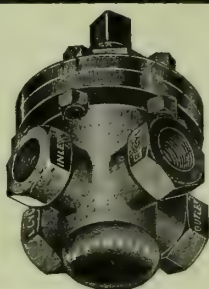
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PITTSBURGH, PA.

MONDAY, OCTOBER 25, 1909.

Have You Noticed the Earnings of the Railroads?

Reports from railroads all over the country indicate that they are making money. This means that they will spend money. During the panic of the latter part of 1907 and all of 1908 it was the falling off in buying by the railroads which caused such a slump in manufacture. Railroad managers never enter the market when prices are down and when their earnings are low. They buy on the top of the market when their traffic is good.

It has been estimated that the railroads of the country consume between 50 and 60 per cent. of the manufactured iron and steel. They are also large consumers of cement and timber. With the railroads buying as they are at present, and which they will continue to do so long as they have all the traffic they can handle, manufacturers will be put to the test to supply the demand. And that in spite of increased output.

Iron and steel is gradually displacing

wood, and this will help increase consumption. There is not going to be any backset in business for some years to come and manufacturers and dealers will have a splendid market in which to exploit their wares. There is a reservation, however. Those that are well and favorably known will get the cream of the business. Those who are not well advertised will have to plug much harder to get a share of the trade. Those who continued their advertising during the depression have not been forgotten by their patrons and these will come in first for orders, after which the fellow who is not known will be hunted up in an emergency.

It is not too late to gain public attention. It is always time to make a start and by keeping at it, after the start is made, much lost ground can be covered. Get busy to-day. Place an advertisement in *The INDUSTRIAL WORLD*.



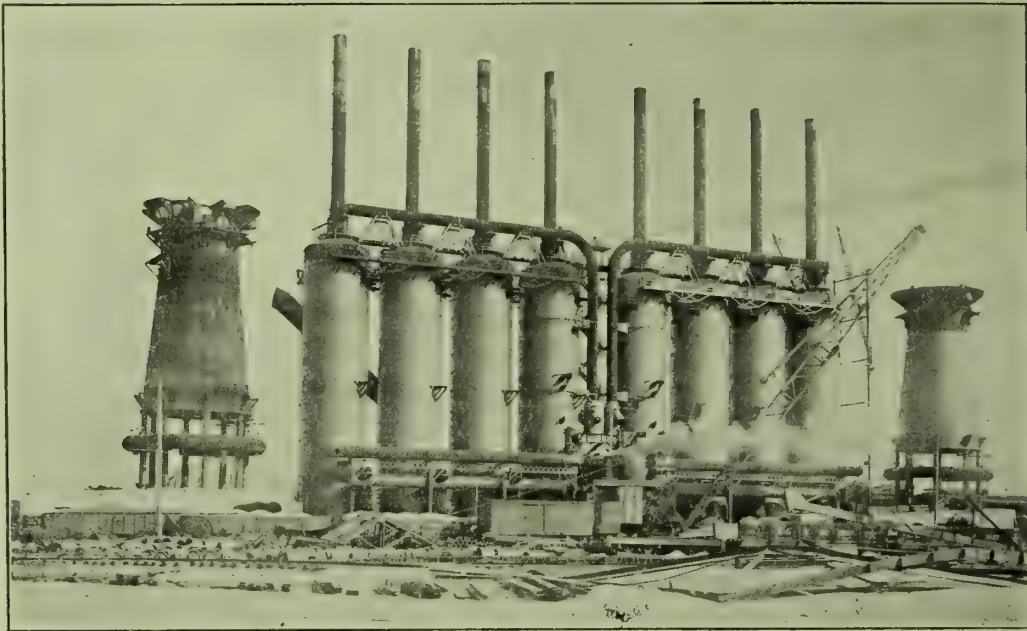
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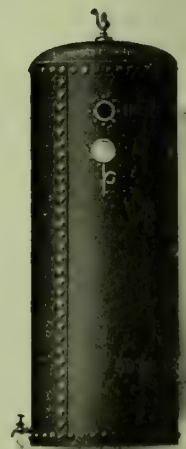
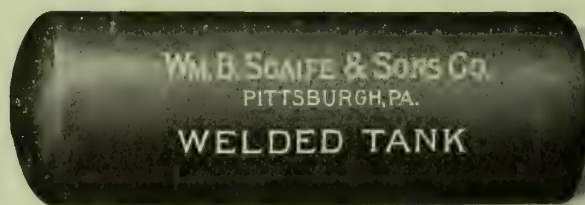
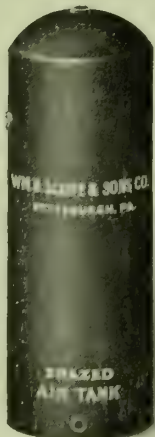
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FORTY-THIRD YEAR.

PITTSBURGH, PA., OCT. 25, 1909.

NUMBER FORTY-THREE.

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Summary of General Iron and Steel Markets

PREMIUM PRICES AHEAD FOR SEMI-FINISHED STEEL—THE RAILROADS LOAD UP CAR COMPANIES WITH ORDERS FOR IMMENSE TOTAL OF STEEL CARS—NEW PURCHASES OF BESSEMER IRON AND SHORTAGE OF BASIC FURTHER EXCITE VALLEY FURNACEMEN, BUT PREDICTED INFLUX OF FOREIGN PIG METAL IS NOT YET IN EVIDENCE.

THAT semi-finished steel will command large premiums before the end of the present quarter, was the prediction of iron and steel experts in Pittsburgh district after a glance at last week's record of new business in steel products. Preparations are being made by the Steel Corporation and the independents to put on additional capacity, some of which will be in operation in the early spring, but a famine in billets and bars, as well as in plates and shapes, seems inevitable before the holidays.

Eastern consumers came into Pittsburgh market during the week just ended, asking for billets. But Pittsburgh and Chicago mills are practically out of the market on unfinished steel for prompt deliveries. Premiums were paid in both districts during the week.

Orders, particularly in heavy material, were strong in all lines during the week,

and on the top of the rush came a record-breaking demand for steel cars, probably provoked in part by the indications of a car famine. Between October 14 and October 23, a little more than a week's stretch of time, orders for a total of between 11,000 and 12,000 cars were filed with the car companies. The Pittsburgh car companies received a little more than one-half of these. The output of the car wheel plants of Pittsburgh district is taken until well along into the spring.

There were few large structural contract lettings during the week, but the fabricating companies have all they can do to keep pace with the business under way. Delayed deliveries from the rolling mills are still the principal cause of complaint. As an indication of the view the Steel Corporation takes of the structural situation, announcement is made of preparations to increase the capacity of

the structural plant at South Chicago, and plans for the erection of a new fabricating plant at Gary. The Gary project was first announced by the Industrial World in its issue of three weeks ago.

No large rail sales are reported, but considerable tonnage from Eastern roads is still pending. Concrete building contractors are worried by a scarcity in twisted bars for concrete reinforcing. It is said a considerable tonnage of this product is in the hands of speculators. Advances in line pipe were announced, though ordinary tube products were not affected. Structural and boiler rivets also advanced \$3 a ton, and railroad spikes are higher.

The pig iron market was excited by the purchase of 20,000 tons of Bessemer from the Bessemer Furnace Association, toward the last of the week, by the Jones & Laughlin Steel Company, at \$19, Valleys, for delivery through December and January. The basic iron market also showed a rising tendency, despite the threat of further importations. Consumers from Chicago and other points in the middle west reported a shortage of basic in those centers and came to Pittsburgh for a supply, putting up prices for first quarter delivery. The foundry iron market continues firm.

Coke contracts are being made under the \$3 mark for 1910, despite the attempt of the Connellsville operators to hold all next year's business to that figure. Connellsville producers are now ready to make a \$2.90 price or even a little less on contracts for six months or longer, while furnacemen are insisting on getting shorter term contracts.

Every effort is being made in the Mahoning and Shenango Valleys to increase the output of Bessemer and basic irons for the remainder of the quarter. Some of the new furnaces which were expected to go in blast before the first of the year—notably one or two in the East and the Jones & Laughlin stacks at Aliquippa—will probably be delayed, and the desire of the large steel makers to fortify themselves against the coming shortage probably explains the recent heavy purchases of the Bessemer grade and the present demand from all sections for basic.

Rush for Steel Cars Marks First Days Of Threatened Autumn Car Famine

LARGE ORDERS IN FROM TRUNK LINES, TOTALLING TWELVE THOUSAND CARS IN A WEEK'S TIME — CAR BUILDERS PREPARE FOR BUSY WINTER.

Car builders are to reap a harvest from the threatened car famine.

In a week's time, the trunk roads have placed orders with the steel car companies for a total of nearly 12,000 cars. Orders have been issued to increase the capacity of the Butler works of the Standard Steel Car Company and every effort will be made to get additional capacity out of the Illinois plant. The daily output of the McKees Rocks plant of the Pressed Steel Car Company was increased during the week to 75 cars a day and the Woods Run plant will be in operation by November 1.

The rush for cars also means an additional demand for car wheels, and the wheel companies are filled up with orders for the winter and spring. The Schoen Steel Wheel Company, a Carnegie subsidiary, has orders ahead for almost three months. The Butler plant received an order for 28,000 wheels in one lot, to equip the new Chesapeake & Ohio cars.

The orders for steel cars placed during the past week include:

New York Central—4,000 cars to the American Car & Foundry Company; 1,300 steel hoppers to Standard Steel Car Company; 2,000 steel hoppers to Pressed Steel Car Company.

Norfolk & Western—500 box cars and 500 steel hoppers to Barney & Smith Car Company.

Ann Arbor Railroad—300 box cars to Standard Steel Car Company.

Toledo & Ohio Central—500 box cars to Barney & Smith Car Company.

Chesapeake & Ohio—Orders to equip 3,500 new cars recently ordered from Pressed Steel Car Company, Standard Steel Car and American Car & Foundry with all-steel wheels.

Seaboard Air Line—1,000 box cars and 25 stock cars, to Pressed Steel Car Company; 25 stock cars to Barney & Smith Car Company.

Norfolk & Western—150 refrigerator cars from Standard Steel Car Company (to be made at Middleton, Pa., shops); 500 steel underframe box cars to American Car & Foundry Company.

Great Northern — 1,000 ore cars to Pressed Steel Car Company.

This makes a total of 7,300 cars for the New York Central; 300 for the Ann Arbor; 500 for the Toledo & Ohio Central; 1,050 for the Seaboard Air Line;

750 for the Norfolk & Western, and 1,000 for the Great Northern—or 11,700 cars, in round figures since October 14, exclusive of passenger equipment and motive power. Besides this, the Clinchfield Coal Corporation has ordered 950 steel mining cars from the Pressed Steel Car Company for operation between Dante, Va., and Crane's Nest.

Of these orders, 1,750 cars go to the Standard Steel Car Company, 4,975 to the Pressed Steel Car Company, 4,500 to the American Car & Foundry Company and 1,525 to the Barney & Smith Car Company.

Building Its Own Cars.

From Altoona, Pa., comes news that orders were issued by the Pennsylvania Railroad Company placing 4,000 men in the machine shops on nine hours a day, an increase of five hours a week. In preparing for the winter season the Pennsylvania found more repair work to its motive power necessary, while the preparations are also well under way for the building of the new freight cars which the Pennsy is to turn out at its own shops.

Huntington Plant at Work.

The Huntington, W. Va., plant of the American Car & Foundry Company is to turn out the order for 500 new cars for the Norfolk & Western railroad. The cars are all to be 40-ton capacity, steel underframe, single stock cars.

The plant is now working on an order of 1,000 cars from the Chesapeake & Ohio. The orders now on hand assure steady operation until April.

The American Locomotive Company is asking bids on a three-story pattern and storage building in connection with the Dunkirk, N. Y., shops.

The Barney & Smith Car Company, Dayton, Ohio, is erecting an addition to its plant, to be devoted to handling steel interior finish for passenger cars.

For New Passenger Cars.

Bids will soon be invited by the Southern Pacific for 84 steel passenger cars, for which \$1,500,000 is available. They are to be operated on the Alameda traction lines in California next spring.

Chesapeake & Ohio Order.

In addition to the 3,500 freight cars recently divided by the Chesapeake & Ohio, 2,000 to the Standard Steel Car, 1,000 to the American Car & Foundry and 500 to the Pressed Steel Car, the company also ordered from the Standard

Steel Car Company four all-steel passenger coaches and four all-steel combination passenger and baggage coaches. The special equipment for these cars includes: Brakes, Westinghouse; brake-beams, Diamond special; brake-shoes, steel-back, American Brake-Shoe & Foundry Company; draft gear, Miner; heating system, Pennsylvania standard; lighting system, United States Light & Heating Company; springs, Railway Steel-Spring Company; trucks, Commonwealth Steel Company; vestibules, Pullman, wide; weather strips, Detroit metal.

Steel Cars for Wabash.

All-steel chair cars have been delivered for the Wabash-Union Pacific fast trains to Colorado, and it is announced that eventually the new train will be composed entirely of all-steel cars. Estimates of the cost of the new equipment are being compiled.

The Wabash proper is also experimenting with all-steel passenger equipment, which will replace the wooden cars now used on the main line through trains.

CONCRETE BARS.

Speculation in the Product Reported in Pittsburgh.

Pittsburgh architects who have recently requested the larger steel manufacturers for estimates on structural steel, plates and other material used in the construction field, are being informed that the mills are so busy now that it would not be possible to submit bids and guarantee delivery of the product for several months to come.

Reinforced concrete constructors in need of twisted bars used in their work are having difficulty in securing them, especially where some special make of bar is wanted. Architects also report evidence of considerable speculation in these reinforced concrete bars coming to light; that firms and individuals have laid in a big supply of them during dull times at low prices, and are now offering to sell and take their profits, evidently having learned that with the exception of the common kind the mills cannot supply the demand and refuse to guarantee delivery until next April in some cases. These reinforced concrete bar agents are busy these days sounding the trade and are noticeably numerous, which goes to show, the architects say, that there is a large accumulation of bars for speculative purposes.

The industrial activity is also the cause of a scarcity of draughtsmen in the architectural offices. One of the leading architects of the city stated that some of the best draughtsmen were hunting work among the architects six months ago; to-day they are all employed by the big

industries because of the rush work. An architect in need of the services of a skilled draftsman, especially one that is necessary to prepare plans for structural steel work, recently found that the men he expected to employ were already at work.

WHEELING BRIDGE.

Lively Bidding on Structural Work.

The contract for the erection of the steel superstructure of the new Market street bridge at Wheeling, was awarded last week to the McClintic-Marshall Construction Company, of Pittsburgh. This company's bid was \$17,700 and was the lowest of eight bids submitted.

This contract covers the construction of the steel work only, and does not include the concrete encasement. Bids on that contract work are now being received.

The bids were as follows: McClintic-Marshall Construction Company, Pittsburgh, \$17,700; American Bridge Company, New York, \$18,995; Riverside Bridge Company, Martins Ferry, O., \$19,344; Toledo-Massillon Bridge Company, Toledo, O., \$19,750; Penn Bridge Company, Beaver Falls, Pa., \$19,820; Pennsylvania Steel Company, Steelton, Pa., \$20,344; Fort Pitt Bridge Company, Pittsburgh, \$25,442, and Riter-Conley Manufacturing Company, Pittsburgh, \$27,210.

The Nelson-Merydith company is making good progress on the construction of the sub-structure.

Texas Order for Line Pipe.

The order placed with the Spang-Chalfant Company, for line pipe, mentioned in the preceding issue of the Industrial World, was for 102 miles ranging from 12-inch to 3-inch, mostly 4-inch pipe. The order was placed by E. C. Lurkin, of the Lone Star Gas Company, for use of the Consumer Light & Heat Company, which is the distributing company for the Lone Star Gas Company.

The company is laying a line from the Clay county, Texas, gas field, near Henrietta, to Fort Worth, which is a 16-inch line the entire distance. The order placed with the Spang-Chalfant Company is for the distributing system and completes the order of the Consumers Light & Heat Company.

Bids to Be Received To-Day.

Proposals for constructing a concrete bridge over Shan run, Stowe township, will be received until 8 o'clock p. m., October 25; by Andrews & Southard, township engineers. Blanks for bidding can be obtained at 509-510 Curry building, Pittsburgh.

NEW EXTENSIONS.

To Build Ferro-Silicon Stack.

The Bessie Ferro-Silicon Company, Columbus, Ohio, is building an additional stack at its plant at New Straitsville, Ohio, which will increase the capacity of the plant about 300 tons a day. The contract for the erection of the furnace has been awarded to H. H. Hosman, Portsmouth, Ohio. The stack will be 75x17 feet and of the most modern design.

Walter O. Amsler, Pittsburgh, has been given a contract for the construction of three Amsler hot blast stoves to be built in connection with the furnace. The stoves will be 75x18 feet.

The company is at present operating one stack 60x14 feet, with an annual capacity of 18,000 tons of ferro-silicon. Robert A. Magly, Columbus, Ohio, is general manager.

New Plant at Queen's Junction.

The Penn Bridge Company, Beaver Falls, Pa., has been awarded the contract for constructing the buildings for the Keystone Tube Company's new plant in course of construction at Queen Junction, Pa.

The buildings will be of steel frame construction and the main building will be 65x207 feet with lean-tos on either side, in one of which the power plant will be located.

Contract for New Open Hearth.

The Lawrence Iron & Steel Foundry Company, formerly the Yagle Foundry & Machine Company, Thirty-second street and Allegheny Valley railroad, Pittsburgh, has awarded a contract to George Naismith & Son, for the construction of a 15-ton open hearth furnace. Excavations for the foundations have been completed and the construction of the furnace will be commenced at once. The contract calls for the work to be completed and the furnace in operation by January 1, at which time the company will add the manufacture of steel castings to its line of foundry work.

Foundry Enlargement Completed.

The Springfield Foundry Company, Smallman street, Pittsburgh, has completed the erection of the new brick and steel building, occupied by the foundry department of its plant and the department is being operated steadily. The company has installed a 10-ton Alliance traveling electric crane in the foundry for handling heavy castings.

Start Work on New Mills.

Ground was broken last week at the plant of the Youngstown Sheet & Tube Company, for the new sheet warehouse

and galvanizing mill building. The cost of the new structures will be between \$50,000 and \$75,000.

According to the plans, both buildings will be built of steel and fitted with traveling electric cranes of the most modern type. Two cranes will be installed in each building. The new departments will be ready for occupancy by spring.

Most of the material to be used in this work will be manufactured in the East Youngstown plant. The company's engineers will superintend the construction.

Westinghouse Extensions.

In order to obtain additional needed facilities for storage and construction purposes, the Westinghouse Electric & Manufacturing Company has awarded a contract to the Dawson Construction Company, for the erection of two new buildings.

These structures will be erected at the eastern boundary of the East Pittsburgh works. One of them, to be used for the construction and storage of catenary overhead trolley work, will be known as the catenary construction building, 40x80 feet. The other will be for the storage of scrap material. It will be 70x126 feet. Both structures will be of steel, with corrugated iron roof and concrete walls.

Water Plant Contract.

Chandley Brothers, Beaver Falls, Pa., have been awarded the contract for the construction of a water plant for the borough of Conway, Pa. The plant will consist of a building, gas engine, pumps, piping, fire hydrants and a 60,000-gallon wrought iron tank.

New Departure by Carnegie Steel.

The Carnegie Steel Company has established a warehouse and store room at Thirty-third street, Pittsburgh, where structural material and other steel products can be obtained in smaller quantities. The new departure is pronounced a decided convenience by contractors and jobbers.

West Virginia Installation.

Murray & Rogers, Farmers Bank building, Pittsburgh, have sold 1,200-horsepower of S. Freeman & Sons' water tube boilers, to be installed in the Windy Gulf Collieries Company's plant at Mullen, W. Va.

For Youngstown Mill.

George T. Ladd, Farmers Bank building, Pittsburgh, reports the sale of a 40x40 heavy duty horizontal Corliss-Bass engine, to the Republic Iron & Steel Company. The engine will be installed in the Mahoning Valley works, Youngstown, Ohio, to operate an 18-inch mill.

To the Inter State Iron & Steel Com-

pany, East Chicago, Ill., two 300-horsepower Bass vertical water tube boilers, and a number of stacks for boilers and heating furnaces.

To the Ontario Iron & Steel Company, Ontario, Canada, a number of additional wheels for heavy rope drive.

To Rehabilitate Gas Plant.

The municipal authorities at Wheeling, W. Va., are considering the rebuilding of the artificial gas plant. W. A. Baehr, a Chicago engineer, has announced to the city councils that the \$110,000 bond issue already passed will be sufficient to put the works in first-class condition.

Mr. Baehr estimated that to build an entirely new plant for a city the size of Wheeling would cost \$800,000. He was sure the present works could be put in first-class condition for \$100,000. Mr. Baehr said his figures covered the estimated cost of putting the works in condition for service both as to the plant itself and the distributing system.

Equipment for Southern Mills.

The National Roll & Foundry Company, Pittsburgh, is operating its plant at Avonmore, Pa., steadily in all departments. The company has orders for roller table work, charging machinery, hydraulic machinery, shears and other equipment for the Southern Steel Company's new plant being built at Gadsden, Ala. The company is particularly busy in the roll department and machine shop, to keep pace with orders for chilled, sand and cast steel rolls.

Filters and Heaters.

The Cummings Filter Company, Pittsburgh, reports the sale of a large filter, to be installed in the Eagle Paint & Varnish Company's plant, with capacity sufficient to purify all the water used about the plant; also a 500-horsepower heater, to be installed in the power plant of the John M. Greek Lumber Company, Washington, Pa.

Double Turn at Columbus.

As a result of the excessive demand for sheet bars, the Columbus (O.) plant of the Carnegie Steel Company, has been ordered to operate double instead of single turn. J. W. Root, the local manager, received orders from Pittsburgh to make preparations at the mill to employ 400 more men.

Bridge Raising Hearings.

The date for the hearing by the board of United States engineers on the matter of raising the bridge across the Allegheny river, at Pittsburgh, to have been held October 18, has been advanced to Tuesday, November 9.

NEW EQUIPMENT.

Engines and Boilers.

R. W. Oswald, Pittsburgh representative of the Atlas Engine Works, Indianapolis, Ind., manufacturer of steam engines and boilers, reports the following sales:

Beaver Clay Manufacturing Company, New Galilee, Pa., 100 horsepower boiler; Atlanta Coal Company, Boswell, Pa., 150 horsepower boiler; Hocking Coal Company, Meyersdale, Pa., 150 horsepower boiler; H. C. Frick Coke Company, Pittsburgh, 150 horsepower boiler, and engines to the following companies: American Window Glass Company, Pittsburgh; Henry Swank Company, Johnstown, Pa., and a manufacturing company in Chambersburg, Pa.

Derricks for Oil Fields.

Lee C. Moore & Company, Pittsburgh, manufacturers of the Neill pipe derrick, last week shipped oil well derricks to Illinois and Oklahoma, to be used in the oil fields in those States. This shipment made a total of 31 derricks shipped since May 25, of which 14 went to Ohio, eight to West Virginia and seven to fields in Pennsylvania. Each of the derricks contained about 1,900 feet of tubing, about equally divided in one-inch, two-inch and three-inch pipe. The company has also received inquiries for derricks wanted in California, New Zealand, and Peru, South America.

Contracts for Hoists.

The Otis Elevator Company, Pittsburgh, has secured a contract for installing steam hoisting apparatus at the Dayton Iron & Steel Company's furnace plant, Dayton, Tenn.; and a 200-horsepower electric skip hoist, to be erected for the Youngstown Sheet & Tube Company's plant, Youngstown, Ohio. The company is also making repairs and improvements on the hoisting apparatus at a number of furnace plants in various sections of the country.

Orders New Crane.

The Westinghouse Electric Manufacturing Company has placed an order with Samuel W. Hay's Sons, Pittsburgh, for a 10-ton Whiting crane, with a 67-foot span and 20-foot lift, to be installed in the East Pittsburgh works.

To Build Montana Power Plant.

John L. Mullen, constructing engineer, Pittsburgh, has been awarded a contract for the construction of a power plant for the Great Falls Water Power & Town Site Company, Great Falls, Mont.

The plant will consist of a 15-foot steel conduit 2,400 feet long, to conduct water turbines with a combined capacity of 40,000-horsepower. The power

building will be 120x300 feet and will be of steel construction. An order for the structural material required has been placed with the Lackawanna Steel Company.

INSPECT REDUCTION GEAR.

Naval Officers at East Pittsburgh.

Captain Griffin and Lieutenant Commander Holmes, of the Engineering Bureau of the United States navy, spent several days during the week just ended watching the tests now being made at the East Pittsburgh plant of the Westinghouse Machine Company, on the newly-patented reduction gear for marine steam turbines. Mr. Westinghouse also was present at the tests, as was John H. McAlpine, who, with Rear Admiral C. W. Melville, U. S. N., retired, is the inventor of the new gear.

The invention was described in some detail by the Industrial World of October 11.

Viaduct at Hamilton, O.

The Hamilton, O., Board of Public Service on October 14, opened bids on the South G street viaduct, across the C., H. & I. Railroad tracks. Three bids were received, the lowest being the Capitol Construction Company, of Columbus, Ohio, of \$12,300. They will receive the contract.

To Make Steel Ties.

Articles of incorporation were filed at Dover, Del., last week for the International Steel Tie Company, of Altoona, Pa., to manufacture, sell and deal in all kinds of railway ties. The capital stock is \$200,000. The incorporators are William P. Day, Venantim A. Oswald, Altoona, Pa.; John J. O'Donnell, Cleveland, O., and Harry Emmons, Wilmington, Del.

Electric Controlling Devices.

McCoy & Brandt, Pittsburgh, report the installation of Allen-Bradley electric controlling devices in the plants of the National Tube Company, American Sheet & Tin Plate Company, Jones & Laughlin Steel Company, and a number of other large manufacturing establishments in the Pittsburgh district. A number of installations have also been made in coal mines, where they are meeting with favor, owing to their water-proof and non-sparking features.

New Structural Contracts.

W. N. Kratzer & Company, structural fabricators, Pittsburgh, are operating their plant double turn and are well supplied with orders. The company has contracts for the construction of a bridge at Morehead City, N. C.; structural material for dams No. 8, Ohio river, No. 1, Monongahela river, and Lock No.

6, Ouichata river, Arkansas; steel tipples, and power houses complete for the Ford Collieries Company, Detroit, at works Nos. 1 and 2, Culmerville, Pa.; a steel frame building for the Griswold Manufacturing Company, Erie, Pa.; structural steel store building for the Pittsburgh-Buffalo Company, Marianna, Pa.; and the steel work for the high school building, Wilksburg, Pa.

GET TWO-DOLLAR COKE.

Deliveries to Jones & Laughlin Company at Aliquippa Begin.

Deliveries of coke to the Jones & Laughlin Steel Company's new Aliquippa furnaces by the Thompson-Connellsville Coke Company, are to begin November 1, on a contract closed last June, which turns out to be unusually favorable to the steel company. The contract calls for 30,000 tons a month, and extends over a period of two years, at \$2 a ton. It provided for deliveries any time after September 1. Under the contract, the steel company is assured of getting coke at an average of about \$1 under the ruling price for at least the next 12 months, which means a saving of \$1 a ton on 360,000 tons of coke in one year.

Eventually, the Jones & Laughlin Company will build its own coke ovens at Aliquippa, but that will not be for some time. The first of the three furnaces at Aliquippa was announced to go in blast about November 1, but it is said that it will be near the first of the year before it is in operation, the other two following at intervals of about a month. The steel company desires to accumulate a stock of about 100,000 tons of coke at the Aliquippa plant. It carries large stock piles at its Pittsburgh plants.

In order to fill this contract, the Thompson-Connellsville Company was forced to double its plant, adding 400 ovens. Of these new ovens 200 went in blast a fortnight ago; the remainder will be fired shortly.

Carnegie Heads Banqueted.

General and district superintendents of the Carnegie plants held a pleasant reunion at Youngstown, O., last week, as the guests of Thomas and Joseph McDonald, of the Youngstown plants of the company. In the party were A. R. Hunt, Homestead works; James Scott, Neville Island; H. J. Schotter, Pittsburgh; C. E. Dinkey, Edgar Thompson plant at Braddock; H. D. Williams, Duquesne works; G. E. Wisner, Bellaire and Mingo Junction works; H. J. Davis, Clarion plants, and John Oursler of the New Castle and Sharon district.

ENGINEERS MEET.

Rapid Transit Problem in Pittsburgh is Discussed.

Members of the Engineers' Society of Western Pennsylvania participated in a diversion on October 19, by holding a meeting in the auditorium of the Chamber of Commerce, Pittsburgh, and discussing the question of rapid transit instead of one of the scientific or technical subjects usually selected for the regular meeting of the society.

President George T. Barnsley opened the discussion by describing the topography of Pittsburgh and some of the difficulties over come by engineering skill in the improvements accomplished. Dr. John A. Brashear, one of the charter members of the organization gave a brief resume of the work accomplished by the society. He urged members as citizens and engineers to become more assertive and take the initiative in civic improvements.

Lee C. Moore was the speaker of the evening. He read a carefully prepared paper dealing with the possibilities in the operation of surface traction lines and subjects. Mr. Moore advocated municipal ownership of the subways and argued that the wealth of the city is adequate to construct four-track tunnels which will take care of the traffic for future generations.

William Fischer presented statistics showing that traffic in New York is over 100 per cent greater than was anticipated for the subways and that while population in suburban districts increased but from 10 to 15 per cent traffic from the same districts increased from 40 to 50 per cent. Valuable suggestions were offered by D. P. Black, Frank I. Gosser, George S. Davison, Chester B. Albree, Morris Knowles and others.

Record Shipment of Beams.

The largest single shipment of steel ever made, it is believed, was started on its way to Davenport, Iowa, October 14, from the Bethlehem Steel Works, South Bethlehem, Pa. Loaded on 40 specially built pressed-steel cars, making a train one-third of a mile long, the 1,500-ton shipment of beams was hauled by two huge locomotives. A remarkable feature is that the 1,500-ton order was completed 24 hours after being received.

Electric Plant Enlargement.

Press reports from Lynn, Mass., say that close upon the announcement that the Lynn plant of the General Electric Company is to be extended by the erection of two mammoth new buildings at the River works, comes another to the effect that the concern plans to make

additions that will give it the largest single factory building in Massachusetts if not in New England.

Increase in business has caused the necessity for more room and building, 74 will have an added length of from 300 to 500 feet. This will make the structure exceed in size the big American Woolen Company's mill in Lawrence. It is understood that the employees at the Lynn plant will be increased from 9,200 to 15,000 men.

ENLARGE POWER PLANT.

New Equipment for Pittsburgh Railways Company at Brunot Island.

Improvements are being made at the Brunot Island power plant of the Pittsburgh Railways Company, which will about double the capacity of the plant. The equipment being installed is the most modern in electrical appliances obtainable. The capacity of the boiler plant is being doubled by a steel, frame and brick addition 60x300 feet, in which nine batteries of Babcock & Wilcox boilers are being installed, which will have a combined capacity of 11,800 horsepower.

In the engine room are being installed three 5,000 K. W. Westinghouse steam turbines direct connected to turbo generators, three 8x24x24x24 Albinger vacuum pumps and a 1,500 K. W. Westinghouse generator direct connected to a cross-compound Corliss engine.

The present equipment consists of three 1,500 K. W. direct-current and three 1,500 K. W. alternating generators, each of which is direct-connected to cross-compound Corliss engines.

Suit on Electric Patent.

The Westinghouse Electric & Manufacturing Company has instituted suit in a Cincinnati court against the Bullock Electric Manufacturing Company for the alleged infringement of a patented improvement in controlling switches for electric railways. An injunction and an accounting are asked for.

To Abolish a Grade Crossing.

Following a conference of officials of the Pittsburgh Railways Company, and representatives of the Washington, (Pa.) councils, the company has signed an agreement to pay \$13,000 toward abolishing a grade crossing over the Baltimore & Ohio railroad. The cost of the improvement will be about \$30,000, and the Baltimore & Ohio has agreed to stand one-third of this expense.

A number of oil motor boats ordered from the Osaka Iron works by the Residency-General in Korea have been completed and fitted with guns. The boats are to be used to guard the Korean coast,

New Structural Capacity in West; More Mills for Gary and Chicago

PREVIOUS REPORTS BORNE OUT REGARDING AMERICAN BRIDGE COMPANY'S PLANS FOR CENTRALIZING WESTERN BUSINESS—INCREASING OUTPUT IN VARIOUS PLANTS.

The first announcement of the project of the American Bridge Company to build a new structural plant at Gary, and to centralize there its Detroit and other plants, which was made by the *Industrial World* of October 4, was confirmed last week in the announcement from Chicago of definite plans for the Gary plant.

Announcement also was made in Chicago during the week of the determination by the Illinois Steel Company, to erect at its South Works an additional structural mill having an estimated capacity of 15,000 tons monthly. Upon completion of this mill the South Works will have the capacity for producing a total of 45,000 tons a month. Work is to begin at once and will be pushed vigorously with a view to the early completion of the mill to meet the rapidly increasing demand for structural steel in the markets of the Middle West.

The plans for the new Gary plant, as given out at Chicago, provide for fabricating mills, designed for an initial capacity of 100,000 tons a month. The plans for this plant have been drawn with a view to future extension which will ultimately admit of the fabrication of 20,000 tons monthly. The first division of this plant will employ approximately 2,000 men.

The American Bridge Company's largest plant at present is in the Pittsburgh district, and the building of the proposed plant at Gary is for the purpose of enabling the company to supply from the Chicago district all of the demand for fabricated structural steel arising from Western territory, the same as it is now prepared to furnish from its plant in the Pittsburgh district.

Pennsy's Dock Project.

The departure from Pittsburgh last week of President James McCrea and other officials of the Pennsylvania in company with W. P. Snyder, whose ore and lake interests make him a factor in the freight trade, is given much significance by some people in Pittsburgh. Recently it developed that the rush of ore down the lakes was such that the dock facilities of the Pennsylvania at the lower ports were insufficient. Repeated reports sent to the general offices concerning this matter were accompanied by state-

ments of the enormous operations of independent companies in the Lake Superior region. They detailed just what the great ore movement meant for independent ore interests, and what influence they had upon blast furnace operation, all of which has a direct influence on the tonnage of the Pennsylvania.

Finally it was decided that the thorough-going president of the great system and his assistants should go into the matter with every opportunity for personal observation, and the trip to Duluth and farther North was arranged in connection with the regular inspection.

No decision has been announced, and it is not expected that President McCrea will make known his plans for the present. But it is predicted by those in close touch with the situation that the inspection trip will result in important improvements being made at the principal ore-receiving points along the lakes. It is probable they will be made next year.

Foundation for New Boiler Plant.

Edward Everett, Pittsburgh, has received the contract for the erection of the buildings of the S. H. Roberts Boiler & Pump Company's new plant at Queen Junction, Pa., and is engaged on the foundations of the plant. The main building will be 90x160 feet, with a wing in which will be located the power plant, engine room and blacksmith shop.

The buildings will be of steel construction and will be completed in time to put the new plant in operation by January 1. A large part of the equipment has been purchased by F. M. Strecker, Commonwealth building, Pittsburgh representative of the company.

Bridge Men Adjourn.

For the first time in the history of the American Railway Bridge and Building association, a southern man was chosen to head the organization at the annual meeting which adjourned at Jacksonville, Fla., October 21. This honor was conferred on J. S. Lemond, of Charlotte, N. C., who succeeds J. P. Canty, of Fitchburg, Mass., as president. The election of officers took place at the closing sessions. Fort Worth, Tex., was chosen as the place for the twentieth annual convention.

The Bridge and Building Supply Men's association, which met at Jacksonville, in conjunction with the American Railway Bridge and Building association, elected C. W. Kelly, Chicago, president.

BETHLEHEM'S PLANS.

Schwab Tells of Project for Doubling Capacity of Plant.

Charles M. Schwab has addressed a note to the stockholders of the Bethlehem Steel Corporation calling them to a special meeting on November 5 to ratify the issue of \$7,500,000 five-year 6 per cent notes. In speaking of the details of the note issue and the future plans of the company, President Schwab says:

I have spent the past year in the works of the Bethlehem Steel Company, in the success of which I am so deeply interested. During that period, my associates and I have carefully studied the entire plant, and its business, with a view of making it thoroughly modern and profitable. To accomplish this purpose, we have outlined plans to carry out which we need the co-operation of our stockholders.

The success of our open hearth rail mill and the structural mills for "special Bethlehem shapes," is assured beyond any doubt. We have now decided upon a plan for doubling their output, for providing pig iron for the increased capacity, and at the same time securing more economical operation. We have not reached our decisions hastily, but only after mature and very careful consideration of all the conditions. Five million dollars is the amount required.

For the purpose of providing this money, as well as of retiring Bethlehem Steel Company's existing issue of \$2,500,000 of 6 per cent gold notes, arrangements have been completed with New York bankers by which they are to purchase an issue of \$7,000,000 of five-year 6 per cent notes of Bethlehem Steel Company.

Crucible Steel Meeting.

The annual meeting of the Crucible Steel Company of America was held in Jersey City on October 20, and the old board of directors re-elected. The usual routine business was attended to. The proposition to amend the articles of incorporation by addition of the authority, "to purchase or otherwise acquire, sell, assign, transfer or otherwise dispose of shares of its own corporation stocks," was adopted. The promised fight against this amendment failed to materialize.

LaBelle Sheet Mills Resume.

The LaBelle Iron Works, Steubenville, Ohio, has started up six hot mills in its sheet department and has plenty of the old men to operate the mills. Some time ago the sheet mill employees demanded that the company should sign the Amalgamated scale, which it refused to do and the sheet mills were shut down. The men are voluntarily returning to work, and it is expected that within a short time all of the mills will be in operation.

REVIEWS OF TRADE CATALOGS.

The Erie City Iron Works, Erie, Pa., has issued bulletin No. 1, describing the Erie City vertical water-tube boiler. Illustrations show the boiler to be constructed by connecting two drums with vertical tubes arranged to make three banks and separated by bafflers which cause the heat gases to make three passes before being discharged into the stack. Claims made for the boiler are large storage capacity, heating and liberating surfaces, a constant and thorough circulation of water throughout the boiler, a lower drum to receive all impurities from the water and an upper drum with steam storage compartments connected with a pipe for delivering dry steam to the supply line. The furnaces are adaptable to all fuels and the combustion chamber is so arranged that the combustion of all gases commenced in the furnace may be completed before they escape to the chimney.

* * *

The Kerr Turbine Company, Wells-ville, N. Y., with offices in the Columbia Bank building, Pittsburgh, has issued a catalog illustrating and describing the line of vertical and horizontal steam turbines manufactured by the company, and showing views of a number of installations where the turbine has been direct connected with generators, pumps, blowers and air compressors. Claims made for the engine are economy of floor space, increased efficiency, absence of vibration and noise.

* * *

The Bruce-Macbeth Engine Company, Cleveland, manufacturers of gas engines, has issued a catalog describing its line of vertical engines of the two- and four-cylinder types. The company was formed recently by the merging of the interests of the Bruce-Meriam-Abbott Company, and the Macbeth Iron Company, for the joint manufacture of the products of both companies. The two cylinder engines are built from 15 to 80-horsepower and the four-cylinder engines from 75 to 300 horsepower.

* * *

The Van Dorn Electric & Manufacturing Company, Cleveland, has issued Bulletin No. 18, describing its line of electric drills and reamers. The company manufactures portable electric machines up to three-horsepower for drilling from 1-16-inch up to three inches, suitable for light machine work and the heaviest structural work. The bulletin also contains a table giving the efficiency and cost of operation of electric drills compared with other systems of power.

* * *

A pamphlet describing complete gas power installations manufactured by the

Bogart Engineering Company, Buffalo, N. Y., has been issued by the company. The illustrations indicate simplicity and efficiency, large bearings, heavy wheels and all parts accessible. The company manufactures single cylinder engines from 20 to 100-horsepower and single and double tandem engines from 50 to 300-horsepower.

* * *

Forges, furnaces and ovens for all purposes and fuels are described in an illustrated pamphlet issued by the W. S. Rockwell Company, New York. The company also manufactures a line of fuel oil and gas burners, and steam and belt driven fuel oil pumping systems.

PERSONAL.

C. H. Lewis, formerly of the sales department of the Cherry Valley Iron Company, Pittsburgh and Cleveland, and Frank Lewis, of the sales department of McKeefrey & Company, Leetonia, Ohio, have organized the firm of C. H. Lewis & Company, with headquarters at 518 Citizens' building, Cleveland, Ohio, and branch office at 718 Park building, Pittsburgh, to deal in iron, steel, pig iron and coke.

v

G. C. Stecher has been appointed superintendent of the Toledo, O., plant of the Republic Iron & Steel Company, which resumed operating last week. Robert Saxton, formerly chief clerk at the shafting works of the Mahoning Valley plant, will be chief shipper at Toledo.

v

Frederick B. Vail, vice president of the American Compressor & Pump Company, New York, was in Pittsburgh, last week in the interest of his company.

v

McCoy & Brandt, electrical engineers, Pittsburgh, have moved their office from the Stevenson building to a suite of offices in the House building.

v

Alexis W. Thompson, president of the Inland Steel Company, has been added to the executive committee of the Southern Iron & Steel Company.

Increased demands for cars for coal and other traffic early in September caused the officials of the Pennsylvania Railroad System to call for a report from all divisions of the system as to the number of cars not in activity on its lines dating from May 20, 1908, and it was found that there were at that date a total of 92,213 cars idle. On October 4 the number not in active service was 1,800 cars, and since that date these have been put into service or ordered under quick repair for service. At present the system is experiencing a shortage of cars with which to meet the demands of its shippers, and this shortage is growing more acute daily.

OBITUARY.

WILLIAM J. McKENNEY.

William J. McKenney, aged 58, a brother of James H. McKenney, a member of the W. G. McKenney Iron & Steel Company, died October 16, at Pittsburgh, from injuries received by being hit by a trolley car. Mr. McKenney was born in Pittsburgh and for many years had been identified with the McKenney company. He was unmarried and a member of the Methodist Episcopal church. Mr. McKenney leaves three brothers, James H. and Samuel S. McKenney, of Pittsburgh, and A. W. McKenney, of Greensburg, Pa.

A. H. HUMPHRIES.

A. H. Humphries, aged 63, a prominent coal operator of Western Pennsylvania, died of neuralgia of the heart October 18, in Pittsburgh. Mr. Humphreys was born in Wilkes-Barre, Pa., and was the son of Robert and Catherine Humphreys. He was a former resident of Irwin, Pa., where for 25 years he was general superintendent of the Westmoreland Coal Company. Later he became identified with the Ellsworth Coal Company, and New River Coal Company, of West Virginia. At the time of his death he was president and owner of the Humphreys Colliery Company, of Phillippi, W. Va.

WILLIAM GILLESPIE.

William Gillespie, aged 73, of St. Louis, who up to his retirement from active business life in 1903, was for 30 years connected with the St. Louis Municipal Water Department as mechanical engineer, dropped dead from heart failure October 15, in St. Louis. Mr. Gillespie was born in County Tyrone, Ireland, in April, 1836. His father migrated to America in 1846, coming up by way of New Orleans, and immediately settling in St. Louis, engaging in the boiler making business until his retirement, in 1875. William Gillespie became an apprentice in a machine shop. When the civil war opened he enlisted in the navy yard as a machinist. After the war for three years he conducted a machine shop at Tenth and Mullanphy streets. In April, 1870, he was appointed assistant mechanical engineer of the St. Louis waterworks. After 16 years' service he was made chief engineer of the department, in which capacity he served for another 16 years, retiring in June, 1903.

An order for 100 steel gondola cars has been placed by the Westmoreland Coal Company, Irwin, Pa.

Extensions for Southern Ohio Plant; American Rolling Mill Company's Plans

OPEN HEARTH PLANT AND NEW MILL EQUIPMENT TO MORE THAN DOUBLE CAPACITY. HAMILTON, O., FURNACE SOLD. OTHER CHANGES.

The American Rolling Mill Company, with headquarters at Middletown, O., has announced that it is preparing to build a new open hearth plant, blooming mill, bar mill, ten sheet mills and possibly a plate mill.

Engineers are now working on the plans, which will be ready for proposals in a short time. The company recently increased its common stock capital \$1,500,000. The \$3,000,000 realized from stock and bonds will be used to erect the new plant, probably at Middletown, which will have a capacity of 100,000 tons of ingot steel a year. The company now owns two plants, one at Middletown and one at Zanesville, with a combined capacity of 50,000 tons a year.

George M. Verity, president of the company, is said to have received propositions from Hamilton, Zanesville, Cleveland, Ashtabula and Toledo, for the location of the new plant at one of these places. President Verity and the directorate of the company favor building the extension at Middletown, but have agreed to consider propositions from the other points. Hamilton is making an active effort to secure the plant.

In an informal statement to the Middletown Business Men's Club, President Verity informed them that the proposed new plant will employ 1,000 to 1,200 men. The plant at Zanesville is exclusively a finishing plant for corrugated iron sheet metal, building materials of all kinds, as well as three different styles of patent metal lath and corrugated culverts and water flumes.

The proposed improvements contemplate more than doubling the output. The new extension will therefore be an independent institution.

Under the new conditions, it is intended to make the two mills that at Zanesville and Middletown the finishing plants, while the new plant will be the producer of material.

W. E. Hulton & Company, of Cincinnati, who headed the syndicate which underwrote the company's new stock issue last week took a delegation of 100 Cincinnati people to Middletown by special train. The company officials, headed by George Verity, the president, met and welcomed the visitors, and some brief speechmaking was done. Headed by Mr. Verity the party was escorted through the plant. The company owns

the basic patents for the manufacture of a non-corrosive steel, and access to the mills is rarely granted to outsiders.

Hamilton, O., Furnace Sold.

Pittsburgh steel men were interested in the announcement from Hamilton, Ohio, of the lease from the Hamilton Iron & Steel Company of its blast furnace, located at that point, to new interests, headed by Eugene Zimmerman, former president of the Cincinnati, Hamilton & Dayton railroad; Maurice Sternberger, a Jackson (O.) coal operator, and some Pittsburgh men, who will operate the furnace and develop the business on a broad scale.

The Hamilton Iron & Steel Company was organized two years ago with a capital of \$1,000,000 and a bond issue of half that amount. The company had George L. Pearson, of Cincinnati, for president; E. N. Ohl, of Pittsburgh, as vice president, and R. E. Field, of Cincinnati, as secretary and treasurer. These officers with W. R. Todd, N. S. Kent and F. F. Dinsmore, of Cincinnati, and O. V. Parrish, of Hamilton, composed the directors.

The blast furnace, which was built in 1907, has a daily capacity of 300 tons and was operated but a short time when it was shut down and has since been idle. The new lessees expect to blow in the furnace and operate it steadily. It is understood that E. N. Ohl, of Pittsburgh will remain with the operating company. Under the former management the company passed through a somewhat stormy career internally and was identified with the old United Steel Company at one time through similar representation on the board of directors. The new company, it is understood, intends to operate the furnaces on foundry and basic iron.

Absorbs Gas Engine Company.

The Sheffield Gas Power Company, of Kansas City, Mo., announces that it has purchased the entire assets, factory and good will of the former Weber Gas Engine Company, at bankruptcy sale. The factory has been in operation throughout the term of the receivership, and has been continued in operation by the new company without interruption. The management of the gas engine business, as well as the sales and factory departments, are in entirely new hands. George M. Hawes, the president of the company, is a graduate of the Massachusetts Institute of Technology, and

has devoted much time to gas engine and producer design.

Ohio Boiler Company Absorbed.

At Girard, O., last week, the McAllister-Byrnes Construction company, successors to the Ohio Boiler Company, had a meeting and organized by electing the following officers: E. H. Lotze, president; John H. Byrnes, vice president and manager; H. McAllister, treasurer; W. R. Phibbs, secretary; Washington Hyde, assistant treasurer. These officers comprise the complete directorate. The new concern takes over the plant of the old concern and will improve it with the installation of much new machinery. The plant will make a specialty of plate construction work.

Kenova (W. Va.) Plant Completed.

The new plant of the Independent Steel & Wire Company, of Pittsburgh, at Kenova, W. Va., was completed last week. On Monday Contractors Taylor & Robinson turned the structures over to the managers of the steel plant, and they were accepted. These structures cover several acres of ground. Exactly 84 days ago ground was broken for the buildings. The work done in the construction of the buildings represent an outlay of almost a quarter of a million dollars.

Tidewater Steel Sale.

The Delaware county (Pa.) courts last week refused to set aside the sale of the plant of the Tidewater Steel Co., at Chester, Pa., but has issued an order permitting the books of the company to be open to inspection. The property was sold recently to attorneys representing Robert McCurdy, Charles Hart and other Youngstown, O., people, for \$305,100. Contention was made by attorneys for some of the shareholders and interested parties that the price was too small.

Errata.

The United Car Tracing Company, House building, Pittsburgh, makes a specialty of expediting important shipments, by giving personal attention from the time an order is placed until the shipment has reached its destination. In the company's advertisement which appears on page No. xiv of this issue the word "experimental" appears inadvertently, instead of "experienced." The advertisement should read: "Our Specialty—Furnishing experienced tracers to rush important shipments, to avoid delay in transit to or from any point in United States and Canada."

The Columbus Bolt Works, of Columbus, Ohio, is building a new four-story addition,

FOR TECHNICAL PUBLICITY.

First of Meetings for Season 1909-10 Held in New York.

The first of the Technical Publicity Association's monthly meetings for 1909-10, was held October 14, in its headquarters, 14 Gramercy Park, New York. The president of the association, Charles S. Redfield, advertising manager of the Yale & Towne Manufacturing Company, was toastmaster. The only extended address was that of George French, editor of "Advertising and Selling." Preceding his remarks the attention of the members was occupied with reports of committees.

Howard M. Post, advertising manager of the Western Electric Company, told of plans for a systematic, analytical study of effectually tracing results from trade paper advertising. The keying method, he said, has proved inadequate. There should be some way of determining the effect of such advertising, declared Mr. Post. At conclusion of discussion on this subject in which every point of view was presented, Mr. Post was made chairman of a committee to outline this study work for the association.

"It is about time for advertisers to cease to shy at that word Psychology," said Mr. French. His remarks were an interesting presentation of the psychological and artistic aspect of advertising.

Mr. French took as his text the postulate of Hugh Chalmers in a recent address at Louisville. Mr. Chalmers he referred to as "the greatest salesman, perhaps the greatest advertiser, in the country." This postulate is that every sale by anyone anywhere is made in a man's mind—the mind of the one to become the purchaser.

"Advertising is profitable," said he, "only when we consider this one thing. The individual advertisers are the men who create, who place, who look at this. If I am to do anything, if I am to be effective, I have to get the mind of the man I am to sell goods to. I will assume that in order to sell goods there must be a salesmanship message in the mind of the customer. The question is how to place that message; what kind of place is the mind; how does it comport itself; what that message is to be, and how is it to be sent?"

This led to the statement of the subject of psychology. He made his chief point in the phenomenon of suggestion.

Mr. French then came to the second part of his subject, which he declared to be more or less allied with psychology.

"The principles and fundamentals of art are a great help also to advertisers," he said. "You must think of your advertisement as a picture. The eye has to

have something to attract it, or a person can't be impressed. Certain elements or qualities go to make an advertisement attractive. These are the same that lie behind every piece of art, that is, true art. Some of these are form, proportion, balance, harmony, tone, symmetry, perspective, color. They are easy to get if in planning you have in mind their usefulness.

"One line of study is well worth reading up a little, and that is optics. The power of the eye is extremely limited. It seeks to reject the printed matter we seek to impress upon it. It acts in a seemingly erratic manner in reading. It doesn't travel steadily, but in jerks and jumps. These are known as fixation points. The eye wants to stop; it goes on haltingly, painfully.

"The normal reading line is not over 3½ inches wide. This the eye can take in with five, six or seven fixations. It should be divided up so that the eye can read it easily. Catchlines should be of such a nature that the eye can pick them up without conscious impulse—without any effort of the will. There should be no obstacles. This is of the utmost importance to the advertiser."

In response to a query as to the size of the type, Mr. French said:

"Type below nine-point is apt to be less agreeable than nine, ten, or eleven. We must also consider the design. Only two or three designs of type face endure. All publishers have noticed how many series of type have dropped out of use. Almost all that have lasted are of the pure Roman style, because it is more agreeable to the eye. Caslon type, in use back when our fathers were born, is just as popular to-day."

Southern Cement Consolidation.

The Maryland Portland Cement Company, of Baltimore, operating at Security, Md., and the Berkeley Limestone Company, of Martinsburg, W. Va., have planned for a consolidation under the name of the Security Cement & Lime Company, with an authorized capitalization of \$2,000,000 of stock and \$1,000,000 of bonds. It is proposed to treble the capacity of the cement plant at Security to a daily output of 2,400 barrels, and to develop at Martinsburg a very large plant for the manufacture of lime and crushed stone, with a daily output of lump lime of 2,000 barrels.

Cold Rolled Shafting Advances.

Cold rolled shafting manufacturers have opened order books for next year at two points advance for such delivery, carload lots delivered base territory being 55 off, while this year deliveries remain at 57, less carloads being five points higher in both cases.

JAPS BUY MACHINERY.

Samples Being Purchased by Oriental Commissioners Here.

Dispatches from Washington during last week's visit of the honorary commercial commission of Japan to that city declare that extensive purchases in the United States by members of the commission of a large variety of manufactured articles which heretofore had not found a market in the Orient cause American trade experts to look for a heavy increase in trade between the United States and Japan as the result of the tour now being made by the commission. In spite of the fact that the distinguished Japanese visitors have been received hospitably by every city they have visited thus far, it has been apparent in a number of places that the real purpose of the commission in coming to this country is not fully understood.

From questions asked of Americans accompanying the Japanese, continues the Washington dispatch, it has been made clear that many people believe the Oriental visitors have come to this country primarily to gain ideas of American industry and inculcate them into the national life of Japan. Undoubtedly this is one of the great objects of the trip, but their purpose goes much further. Baron Eiichi Shibusawa, chairman of the commission, said:

There is a large element in Japan to-day that opposes the introduction of Americans. Usually some class of modern machinery unknown in our country, but about which vague rumors have been heard, is meant by the term "new fangled." Our merchants know that many of these machines could be used to advantage, but there is a prejudice against them which deters merchants from risking importations.

In a measure our commission has come to the United States as a court. We will go home and report that many articles are manufactured in the United States that could be used in Japan to cheapen production along many lines. It is believed that the people will have confidence in our judgment, for we are the representatives of the people—not the Government. Heretofore all commissions to the United States have been sent by the Government. They have not always been representative of the commercial spirit and the decisions handed down were not always accepted.

Purchases by members of the commission began at Seattle and have been continued in large cities clear across the continent. Investments have been made in machinery used in the lumber industry, mining, milling, agriculture, fruit growing, fruit preserving and labor-saving devices used in commercial offices and banks.

During the visit of the commission to New York, Baron Shibusawa, one of its most prominent members, made an earnest appeal for commercial rivalry upon

principles of fair play and square dealing between the United States and Japan before the New York Chamber of Commerce. The Japanese commissioners were guests of the chamber at a special meeting. The baron said the commercial embassy was not sent by the Japanese Government, but by the Japanese people. He congratulated the United States and New York city on their marvelous development.

"We bring no official message," the baron continued, "but a message of good will and peace from the people of Japan. The two nations, facing each other across the Pacific, should be friendly and act in union and understanding in the solution of the great commercial problems of the peoples who live on the shores of the Pacific. We ask for a proportionate share in this activity. There may come a time when we shall have to compete with you, but this will be upon principles of fair play and square dealing on our part, and, I hope on the part of the United States."

Allis-Chalmers Report.

The annual report of the Allis-Chalmers Company, of Milwaukee, which corporation controls the Bullock Electric Manufacturing Company, at Cincinnati, shows total earnings for the year ending June 30, 1909, after deducting cost of manufacturing and selling taxes, insurance and other general expenses, dividends on Bullock Electric preferred stock and provision for doubtful accounts to be \$1,809,009, less maintenance, repairs, renewals and interest on bonds and notes payable aggregating \$1,673,577, leaving net earnings for the year of \$135,431. President W. H. Whiteside states that dull times necessitated the operation of the plant at 50 per cent of capacity. Continuing, he says:

"New business booked commenced to show substantial gains in January last, and for the last half of the year averaged per month nearly 63 per cent more than the monthly average for the first half. This increase with advancing prices has continued to the present time. In September the total amount of business booked exceeded every month but one since the organization of the company, and for the present month there is an equally favorable prospect."

Storage Battery Combination.

The Westinghouse Storage Battery Company, which was incorporated in July, with a capital of \$1,750,000, has taken over the General Storage Battery Company, the works of which are at Boonton, N. J., and the storage battery department of the Westinghouse Machine Company, which will be transferred to Boonton.

Independents' Tribute to Judge Gary.

On the night of October 15 at the Waldorf, in New York, the independent steel makers of the United States and Canada gave a complimentary dinner in honor of Judge Elbert H. Gary, chairman of the Board of Directors of the United States Steel Corporation. More than 200 officers of the independent steel companies and practically all of the officers and directors of the United States Steel Corporation were present. Charles M. Schwab was toastmaster. One of the features of the dinner was a short speech by J. P. Morgan. It was one of the few after-dinner speeches Mr. Morgan has ever made, and he received a great ovation. He said:

"I wish it were in my power to say all that I would like to say on this occasion. What I might say at another time would be pretty poor, but to-night I am very much overcome by all that I have heard said, for Judge Gary and I have been working together now for 10 years. Perhaps none of you appreciate how much it means to me.

"I feel as though we were all just together. It is impossible for me to say more, and I must ask you to accept my appreciation of how deeply I feel for the kind evidence of your sentiments toward me to-night."

E. A. S. Clarke, president of the Lackawanna Steel Company, was given the privilege of presenting to Judge Gary the handsome golden vase and the vellum testimonial booklet which constituted the tribute of the independent steel men toward the chairman of the Steel Corporation in appreciation of his important work in behalf of the steel industry in the past.

Responding to the welcome of the "independents," Judge Gary said in part:

"In the days gone by never to return it is to be hoped, it was a common practice for competitors in business to act in accordance with the rule that 'might makes right,' and for permanent success to be reached and enjoyed only by those having the greatest strength and power or the longest purse. As a result it frequently happened that the weaker or poorer were crushed and destroyed. A competitor was treated as a common enemy. Methods for his defeat and overthrow were used regardless of good morals or good policy.

"Possibly in some instances they rebounded to the pecuniary advantage of a few though even that is doubtful. Certainly it was not permanently beneficial to the general public; and from the standpoint of good morals, was a shame and a disgrace. Although the conditions stated may never have existed in the iron and steel business nor the methods

required to invoke by the managers of our line of industry, still it is safe to say there are those in this room who know by sad experience that the means employed by those in charge within the last 20 years were calculated to enforce the law of the survival of the fittest. Even within my knowledge of the business, which is brief of time as compared with that of others, who are here this evening, it has seemed to me that business was being done by several, at least, of the manufacturers of iron and steel, without regard to the rights and interests of all others.

"I do not, of course, assert that there was any breach of the law, or that force or violence was resorted to, but I mean that there was in some cases lack of confidence, a withholding of information, a piracy of business, and indiscriminate and reckless cutting of prices, a promise to recognize the rights of others made with no intention of fulfilling the promise; an overbearing, unfair, destructive competition which drove many out of business, kept many others on the ragged edge of existence and brought demoralization to the industry and more or less unfavorably influenced business and final conditions generally.

"If it is claimed this is an overstatement of facts it is only necessary to carry the mind back to the time when pig iron sold for \$8.50 per ton, billets for \$12.50 per ton, and rails for \$16 per ton; when the wages of common laborers were two-thirds of the present prices or less, and strikes among the men were of frequent occurrence; when mills and furnaces were idle or dismantled, and when the banker dreaded to see the steel and iron manufacturer enter the door of the bank.

"In passing it is proper to say that in the long run an unreasonable destructive competition such as I have referred to is prejudicial to the best interests of all concerned, including the manufacturer, his workmen, his customers, and the general public. The reasons should be obvious, and will not be dwelt upon at this time.

"During the last 10 years, methods and conditions have been changed for the better. As between the gentlemen who are in control of the iron and steel industry in America at present there exists a most intimate relation. In your intercourse and communications you are open, frank, and unreserved. In your treatment of each other you intend to be just and fair. You can witness the success and prosperity of your neighbors without the slightest feeling of envy or discomfort. You believe in competition, but not hostility; in rivalry, but not an-

tagonism; in progress and success for all, but not in the punishment or destruction of any.

"We do not advocate combinations or agreements in restraint of trade nor action of any kind which is opposed to the laws or to the public welfare. We do not expect the survival in business of any one who by reason of incompetence, dishonesty, or faults is unable to cope with his competitors in an open market and a fair field. The public interest is opposed to any arrangement which will secure the pecuniary success of any individual not able to reach it in competition with others. What we advocate is fairness and friendship in business, cordial intercourse, confidence in each other, frankness in disclosure, when information is properly requested.

"If it is claimed that the suggestions referred to are not practical, the answer is they have been carefully considered by the gentlemen who attended this reception and dinner and have been adopted. With you they are no longer theories. In many ways and on many occasions you have personally and individually given evidence of this fact. By your decision and your attention you have reached and now occupy a high place in the estimation of the entire industrial world.

Judge Gary referred to the panic of 1907 and the part the steel trade had played in it. Referring to foreign relations, he said:

"The manufacturers of our products throughout the world are more or less dependent with each other. As a rule, prosperity for one means prosperity for all; and adversity for one means adversity for all. The foreigners have in many ways and on many occasions exhibited a disposition to foster relations with ourselves which are calculated to add materially to our progress and success. We should be willing and anxious to reciprocate in every possible way. Bitter, wrathful, and destructive competition in business is not permissible unless it becomes necessary in self-defense. There are two reasons for this conclusion: first, because it is right, and that is sufficient; and, secondly, because it is good policy, and therefore profitable. And so I conclude by saying the controlling thought in the minds of those who are responsible for this reception and dinner will continue and grow in estimation to the great benefit of the people of this country. You have taken an advance position and will not recede."

Among those present were John D. Rockefeller, Jr., Henry C. Frick, P. A. B. Widener, George W. Perkins, J. P. Morgan, Jr., George F. Baker, J. F. Dryden, Nathaniel Thayer and Henry Phipps, all of the directorate of the

United States Steel Company, and the presidents of the principal independent steel companies of the United States and Canada, B. F. Jones, Jr., president Jones & Laughlin Steel Company; W. L. Jones, general manager; Willis L. King, vice president; Thomas Lynch, president H. C. Frick Coke Company; T. F. Bray, vice president, Republic Iron & Steel Company; Herbert Dupuy, chairman Crucible Steel Company; A. C. Dinkey, president Carnegie Steel Company; T. W. Guthrie, president Republic Iron & Steel Company; directors of United States Steel Corporation, J. H. Reed and Thomas Morrison.

Informal speaking was participated in by Joseph G. Butler, Jr., president of the Bessemer Association; T. J. Drummond, president of the Lake Superior Corporation; Charles Kirchoff, vice president of the David Williams Company, and Willis L. King, vice president of the Jones & Laughlin Steel Company.

ST. LOUIS' FREE BRIDGE.

Work on the Approaches Is at Last Begun.

Work on the approaches for the Municipal Free Bridge, for which St. Louis voted \$3,500,000 in June, 1906, began last week. Oddly enough, although the city of St. Louis is to own the bridge and operate it, the first real work of construction is being done in Illinois, where the city got a right of way by a special act of the Illinois legislature. Workshops, train loads of materials, partly finished barges and cassettes are now in evidence on the east side of the river. A railway switch has been constructed and cars of material are daily being unloaded.

Workmen are employed on the first of the five barges to be used in floating material, etc., to the location of the piers, and the first caisson is scheduled to be ready for real work before the end of next week. Though the east land pier is apparently on dry land, 90 feet of it will be below the water level at low-river stage, and a pneumatic caisson will be required for practically all of its 110 feet of depth. The piers will be 35x90 feet and nearly 150 feet high.

The estimated cost of the steel superstructure is about \$1,600,000. The authorizing act for the letting of this contract passed the St. Louis legislative bodies last week. Bids will be in by the middle of November. About 16,300 tons of nickle steel will be required. Specifications are already out on the contract.

In order to augment the facilities of the Antung-Mukden Railway, the Japanese government has in view the construction of a fine harbor at the mouth of the Yalu river.

FIRES AT INDUSTRIAL PLANTS.

Newark, N. J.—Regarding fire of two weeks ago, Kraeuter & Company, manufacturers of drop forgings, write the Industrial World: "Our entire drop shop was destroyed, with about \$35,000 damages. We have however, contracted for new re-enforced concrete buildings, in place of the ones destroyed. We are cleaning up the debris and are doing all in our power to get back to work. About \$50,000 worth of finished tools were soaked with water, and are now covered with oil. We will be in a position to ship out our finished stock within a few weeks, and assure our customers that the delay will not be very long."

* * *

Quebec — The loss from the fire which swept Quebec's water front October 17, will exceed \$1,000,000. All the burned buildings were full of grain and goods awaiting shipment on ocean-going vessels. Besides the Canadian Northern Railway elevator, where the fire originated, the Redford line steamer sheds, the Harbon Commissioners' sheds, a cold storage building and the Customs House were burned.

* * *

Vernon, Conn. — Plant of the Vernon Woolen Company destroyed by fire October 12. The loss is estimated at \$100,000, with \$90,000 insurance.

* * *

Richmond, Va.—Manufacturing department of Banghman Stationery Company, Bowe and Marshall street, damaged \$15,000 October 13.

* * *

Milton, N. H.—Loss on plant of Boston Ice Company, destroyed October 9, placed at \$100,000.

* * *

Norfolk, Va.—Norfolk & Western passenger station almost destroyed, together with sheds, offices and several cars, October 14.

* * *

Olyphant, N. Y. — Machine and blacksmith shops of the Lackawanna colliery destroyed October 11. Loss \$12,000.

* * *

Pittsburgh — Office building of Riter-Conley Company, at Leetsdale, destroyed October 1; loss \$10,000; insured.

* * *

San Francisco, Cal. — Western Roofing & Paving Company plant was destroyed, October 9. Loss \$100,000.

* * *

Williamsport, Pa. — Reading Railroad station at White Deer destroyed October 11. Loss \$5,000.

* * *

Evansville, Ind. — Plant of Evansville Mirror & Beveling Works, damaged \$4,000 October 15; insured.

Smoke Inspection in the City of Grand Rapids, Mich.

CONSIDERABLE interest has been aroused among advocates of smoke prevention devices by the report of Louis C. Towner, smoke inspector for the city of Grand Rapids, Mich., for the fiscal year ending March 31, 1909, which has been circulated in pamphlet form.

Mr. Towner has devised a very complete system of charts, with which the

complished very good results in this department, and have not as yet resorted to court prosecution to enforce the ordinance, as it has been conceded by others who have been successful in abating the smoke nuisance that an educational campaign is productive of the best results.

If the manufacturer or owner would but realize that abatement of the smoke

take immediate steps to better his condition. The elimination of smoke is a business proposition, and it is conceded by many that the manufacturer or owner who at the present day allows black smoke to roll out of his stack is guilty of extravagance in operation. The sooner this proposition is looked at from this standpoint the sooner we will have a smokeless and clean city.

During the past year we have taken a record of the equipment, conditions and general data of 42 plants, and have added same to our indexed system.

We have made 617 smoke observation charts during the past year. A copy of the chart showing violation is furnished to owners of stacks when violation notice is served. These charts have been added to our indexed system.

Smoke Ordinance Violation Notices to the number of 42 have been served. In the majority of cases these notices were the means of securing the betterment of conditions.

The following table shows the total devices in operation at the creation of this office, the total in operation April 1, 1908, and the total in operation April 1, 1909.

Type or Setting.	15,'07	1,'08	1,'09
Automatic stokers	11	16	19
Hand fired furnaces (pat.) ..	2	14	22
Various steam jets	12	12	13
Brick bridge walls	8	9	12
So-called smokeless coal..		19	76
Heat'g from cent. station..		25	38
Coke or hard coal		7	8
Ordinary settings	264	195	151

Totals297 297 339

During the past year we have given considerable attention to the question of smoke nuisance from the railroad locomotives leaving, entering and switching in our city, and have secured 51 observation charts of same. The railroad officials are quite interested in this question and lend their best efforts in co-operating with the department. We believe that the smoke condition in the railroad districts has greatly improved during the past year.

The following is a resume of the past year's work, together with a comparison of previous report:

	1907-1908	1908-1909	Totals
Plants recorded	297	42	339
Smoke charts taken	707	617	1,324
Smoke notices served	56	42	98
Notices served owners	15	10	25
Automatic stokers installed	5	3	8
Hand-fired stokers installed	12	8	20
Adopted smokeless coal	19	57	76
Adopted coke or hard coal	7	1	8
Charts of locomotives taken		51	51
Brick bridge walls installed	1	3	4
Supplied from central station	25	13	4
Not equipped at end of year	195	151	Gain 44

Name	VOIGT MILLING CO.	Location	PEARL ST	Ward	EIGHTH
Engineer	F.R. DOUD	Permit	No.	52	
NO.	KIND	SIZE	REMARKS		
Boiler	1 BABCOCK AND WILCOX	150 H.P.	WATER TUBES 72 = 4" TUBES 1 = 36" DRUM		
			HIGH PRESSURE COAL		
Smoke Precipitator	NOTHING				
Stacks	1 STEEL	34" x 90'			

DATE	INSPECTOR	CHART	% BLACK	% D BROWN	% L BROWN	% FAINT	% CLEAR	% ALL SMOKE	REPORT
1/27/08	607	"	41 2/3	4 1/2	9 1/2			527	VERY BAD
1/31/08	612	"	51 1/2	6 1/2	10			645	"
2/10/08	641	"	29 1/2	3 1/2	9 1/2			395	"
3/20/08	696	"	35	14 1/2	24 1/2			614	"
4/11/08	712	"	56 1/2	5 1/2	10			702	"

No. 1.

report is illustrated. The smoke inspector's office, though but two years old, succeeded in making the smoke ordinance very effective. In his annual report to the Board of Public Works,

nuisance would mean economy in operation, decrease his consumption of coal and at the same time do away with a nuisance which is damaging to health and property, he would not hesitate to

DATE	INSPECTOR	CHART	% BLACK	% D BROWN	% L BROWN	% FAINT	% CLEAR	% ALL SMOKE	REPORT
4/22/08	731	"	52 1/2	4 1/2	10			633	VERY BAD
5/13/08	764	"	34 1/2	5 1/2	11 1/2			481	"
5/14/08	772	"	37 1/2	5	10 3/4			500	"
6/16/08	798	"	31 1/2	5	8 1/2			420	"
6/18/08	812	"	29 1/2	4 1/2	5 1/2			479	"
6/19/08	816	"	33 1/2	4 1/2	9 1/2			452	"
7/10/08	825	"	0	0	0			000	CLEAR
8/10/08	866	"	0	0	0			.8	EX GOOD
10/1/08	920	"	0	0	0		CLEAR		"
12/28/08	1036	"	0	0	0			4/10 OF 1%	"
1/25/09	1118	"	0	0	0			4/10 OF 1%	"
2/24/09	1172	"	0	0	5 1/2			6.8	"
3/9/09	1205	"	0	0	0			4/10 OF 1%	"
3/12/09	1223	"	0	0	0			2.9	"
3/16/09	1246	"	0	0	0			4.1	"
3/25/09	1299	"	0	0	0		CLEAR		"

No. 2.

dated April 1, Smoke Inspector Towner says:

This department was established under section 125 of the City Charter, and is governed by the provisions of an ordinance as adopted and amended on December 26, 1905. The position of smoke inspector was created by a special ordinance passed March 4, 1907.

During the past year we have ac-

The department has adopted the following method of determining the percentage of elimination of smoke from time to time. Our smoke charts are divided into five different steps or grades of smoke; viz.; Black, dark brown, light brown, faint and clear.

The clear represents a perfect condition, (which we are striving to obtain). The faint we consider as (1), light brown as (2), dark brown as (3), and black as (4), as an example: Black smoke for a period of 15 minutes will carry to the air as much carbon as dark brown will in 20 minutes, light brown in 30 minutes or as faint will in 60 minutes, and multiplying the number of half-minute readings noted on the chart under each grade by the number used to designate such grade and adding them together will give the standing of the stack for the particular hour in which the observation chart was made, and by assembling 25 or 30 of these charts and averaging them we secure a fair idea of the average condition of the stack.

The average of the charts taken each month are shown in the following table and improvement of conditions will readily be determined by comparing percentages:

Month.	First Year.		Sec'd Year.	
	No. Chts.	Pct.	No. Chts.	Pct.
April			38	72.2
May	133	72.2	45	73.6
June	72	67.8	31	71.5
July	58	74.4	15	80.8
August	57	65.2	51	70.3
September	22	72.3	24	75.4
October	76	63.5	16	71.7
November	75	70.7	78	82.1
December	61	69.0	34	89.0
January	60	68.7	105	80.6
February	62	75.5	45	82.4
March	31	66.9	135	88.3
Total of charts ...	707		617	
Average percentage elimination each year		69.8		80.4

As recommended in our previous report the smoke observation tower in the city hall has been put into service and has proven a very valuable position from which to secure observation. The tel-

ephone facilities have enabled us to get in touch with violators when their conditions were bad and was the means of improving conditions to a great extent.

We feel that we have succeeded in bettering the smoke conditions during the past year and hope to have as good or better results to report in the future.

Financial Statement.

	Cr.	Dr.
Bal. in fund Mar. 31, 1908	\$ 783.47	
Budget appropriation 1,500.00		
Inspector's salary ...		\$1,200.00
Office supplies		17.13
Printing and blanks ..		39.64
Expenses to conv'n ..		52.43
Observ'n tower con'n.		98.63
Telephone rental		14.65
		\$1,422.48
Balance in fund Apr. 1, 1909		860.99
	\$2,283.47	\$2,283.47

Balance in fund Apr.

1, 1909

Very respectfully submitted,

LOUIS C. TOWNER,
Smoke Inspector.

NEW PATENTS.

The following notes of new patents filed are reported exclusively for the Industrial World by Siggers & Siggers, Washington, D. C.:

935,143—Greer W. Davis, of New Albany, Indiana; improved lathe. The invention relates to the chuck and cutting tool, providing means for holding and cutting brittle substances and more especially square blocks of lime used to make lime pencils for stereopticons. The chuck is provided in one face with an angular socket having a flat bottom wall and outwardly inclined or flared side walls, clamping plates with edges beveled at angles to provide for greater adjustment, and adjusting screws to turn independently of the clamping plate.

935,395 — Metal-sawing machine, Charles Napier, Springfield, Mass. The mechanism is similar in effect to the reciprocatory power of the hack-saw, but embodies an endless band-saw to which a continuously-advancing movement is imparted.

935,358—Cleland Davis, lieutenant, U. S. N., method of treating steel plates, by incorporating into the face of the plate some other metal or metallic compound such as nickel, chromium, or other alloys. The foreign metal or alloy is applied to the surface of the plate while the latter is in a solid condition, then the surface portions of the plate and substance are fused by an electric

arc the melting operation being carried out in a closed chamber to prevent oxidation.

935,906—Harry C. Grant, Bayonne, N. J., improved sheet metal bending machine, assigned to the Lionel Manufacturing Company, of Connecticut. The machine consists of a series of shaping rolls to operate by successive steps, with a series of guide channels, and a movable mandrel mounted in the guide channel preceding the final shaping rolls.

936,110—Improved feed mechanism for boring machines, Arthur Frey, of Schottland, Switzerland. It is claimed the device is capable of being quickly changed for use as a hand feed or an automatic feed, and arranged to permit convenient changing of the gearing so that the feed mechanism may be run at any desired speed according to the nature of the rock to be bored.

936,109—John Fraser, Hackensack, and Thomas Gray, Paterson, N. J., machine for edging metallic plates. The main object of the invention is to so construct a machine that the plates shall be automatically planed on the sides to a slightly tapering width longitudinally, so that when the plates are rolled up and joined by the lock-bars into tubular form, each tube section will be of slightly smaller diameter at one end than at the other, and it becomes possible to fit the small end of one

section within the large end of another section.

The following patents granted October 5, 1909, are reported expressly for the Industrial World by J. M. Nesbit, patent attorney, Park building, Pittsburgh:

Manufacture of gear-wheels, F. A. Brun, Paris, France; rotary engine, James Clark, Medina, N. Y.; feed-water regulator, J. W. Given, Sutton, and J. L. Fogg, Bealls, W. Va.; glass forming machinery, W. W. W. Keyes, Alexandria, Ind.; method of mining coal, D. P. Loomis New Philadelphia, Ohio; glass heating and drawing furnace, Ulgissee Houze, Grand Rapids, Mich.; annealing or other like apparatus, W. R. Kinneer, New Castle, Pa.; ship construction, T. M. Rees, Pittsburgh; apparatus for making clear ice in cans, F. A. Rider, Pittsburgh; steel plant, J. C. Cromwell and H. W. Lash, Cleveland, Ohio, assignor to the Garrett-Cromwell Engineering Company, same place; apparatus for producing fuel gas from peat, W. L. Shepard, Elmwood, Conn.; machine for edging metallic plates, John Fraser, Hackensack, and Thomas Gray, Paterson, N. J.; journal-box, P. J. Harrigan, McKeesport, Pa.

Telephones for Southern Pacific.

The telephone is to take the place of the telegraph in dispatching trains of the Southern Pacific along the lines in Louisiana. The new system will be installed as soon as the necessary arrangements can be made.

New Plant of Althom Sand Company, at Thompson Station

THE Althom Sand Company, with offices at 421 Wood street, Pittsburgh, Pa., has recently put in operation its new crushed rock silica sand plant, at Thompson station, Warren county, Pa., on the line of the Buffalo & Allegheny Valley Railway. They have been shipping since September 1, high-grade glass sand for melting purposes, which shows on analysis of 99.63 silica. They are also shipping grinding sand, and will have furnace and molding sand, also sand used in the manufacture of brick.

The officers are E. D. Graff, president; B. G. Bealor, vice president and general manager; J. Frank Graff, treasurer. The plant at Thompson station, Pa., is located on the B. & A. V. R. R. and the Allegheny river. The building including power plant and engine room and two storage bins, is 175 feet long by 40 feet wide. It is of heavy frame construction, built on solid concrete foundation.

The power plant is equipped with 150 horsepower boiler and engine, which furnishes power to run crusher, pan, screens, washers of the most modern construction, elevators, and dryer, and has a capacity of 300 tons per day. The machinery used is all the most modern type. In addition to the above-men-

installed an Ingersoll-Rand 12x12¼x14 straight line self-contained steam-driven air compressor, which furnishes air to drills for use in the quarry. This is lo-

low for expansion and contraction. The line is held in place on the hill by clamp straps fastened to the line and to trees on the hillside. The shafting and ma-

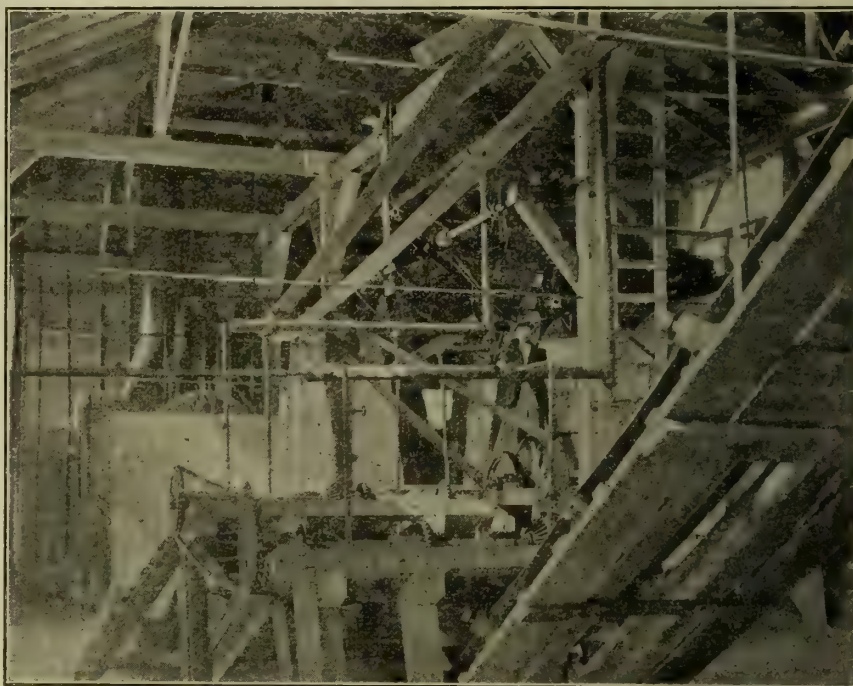


Figure 2—Corner in Mill, Showing Rear of Boiler, Mashers, Screens, Grinding Pan, Sand Conveyors, Etc.

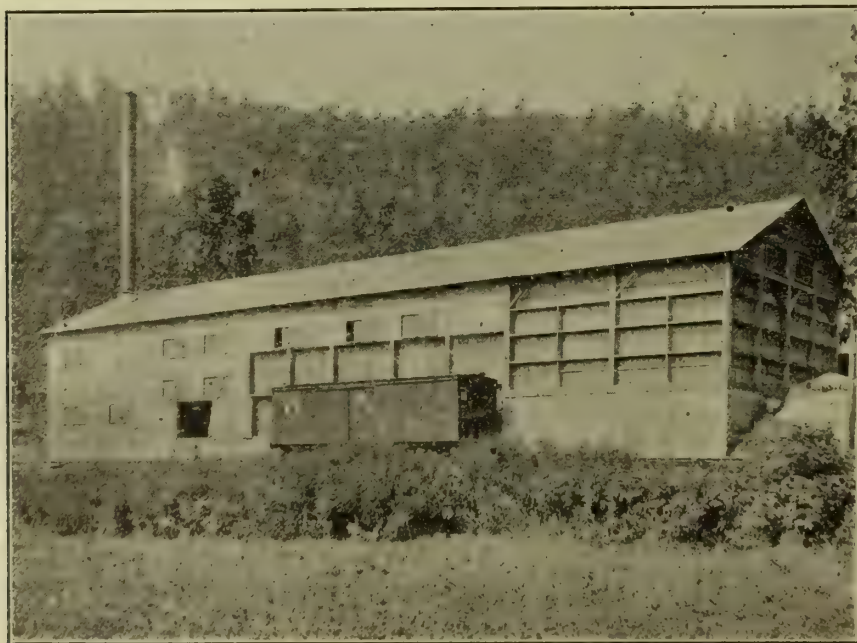


Figure 1—Mill Building, Looking Toward Quarry; Top of Incline Shows at Right of Stack—Point of Knuckle Is 1,800 feet from Mill Building and 760 Feet above It.

tioned machinery is installed a 12x12x12 duplex pump, which pumps the water from the Allegheny river, for all purposes about the plant. They also have

ated in the power plant and the air is carried through a four-inch line for 2,000 feet to the quarry. The line has six expansion valves on it, so as to al-

chinery in the mill are detached from the main building, being placed on heavy concrete piers.

The quarry is at an altitude of 760 feet above the mill, with an incline about 1,800 feet long, a part of which is a 49 per cent grade, the cars being dropped by gravity, the loaded cars pulling up the empties. The cable used is 1¼-inch steel cable. The track is anchored by anchor rods secured to the rails and bolted through anchor posts and trees to keep the track in place.

The quarry contains an acreage of finest quality sand stone, with an average thickness of 33 feet, and so situated that the company can work two faces or two sides of it. The rock is drilled with Ingersoll-Rand air drills which enables quick handling of the stone. The sand is dried by an entirely new design in dryers, which will dry more than 20 tons per hour. The company has also a grinding sand used in polishing plate glass. It is a carefully washed sand with even grain and is reported to be giving very satisfactory results.

In the accompanying photographs, Figure 1 shows the main building which contains the power plant, machinery, and wet and dry sand storage bins, the railroad (river division of the B. & A. V.)

passing in front of the building. In the background can be seen the incline to the quarry, which is on the brow of the hill.

Figure 2 shows the machinery in the mill. In front can be seen the elevator belt and washers, while in the rear of the washers, to the right, can be seen the screens and pan. In the extreme rear can be seen boiler, engine, pulleys and belts.

Figure 3 shows the incline and track from under the trestle at the mill, to the quarry.

Figure 4 shows quarry and face. To left of the figure is intended to open another face, so that the quarry can be operated from either side.

B. G. Bealor, vice president and general manager, has had long experience in the sand business and has been connected with a number of sand concerns. For 10 years he was general manager of the Winfield Sand Company.

The company is so situated that it is able to furnish sand to Northwestern Pennsylvania and Western New York,

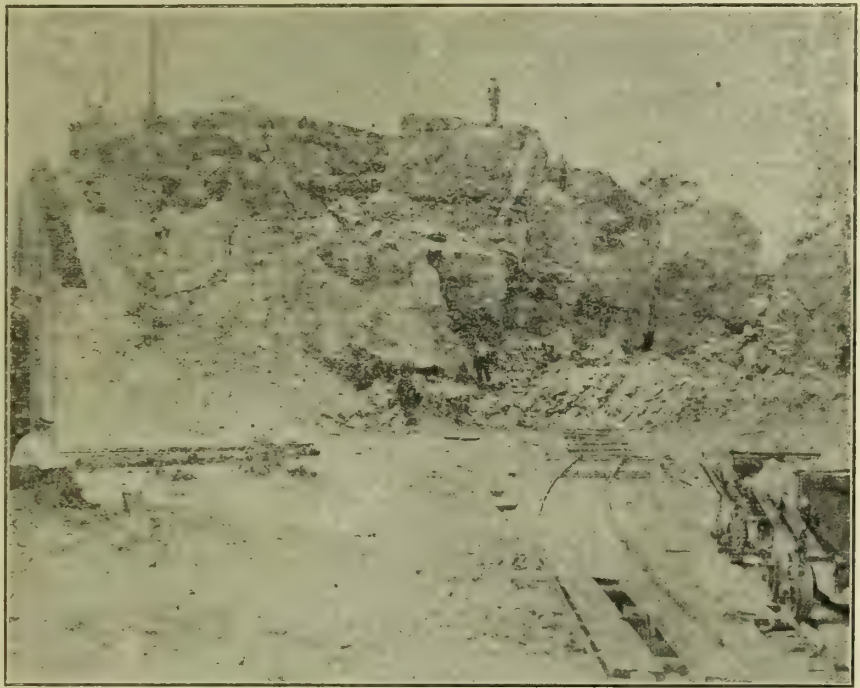


Figure 4—Quarry, 33-Foot Ledge—The Cars Are Standing Over the Shears or Letting Down the Machinery—Blacksmith Shop on Left.

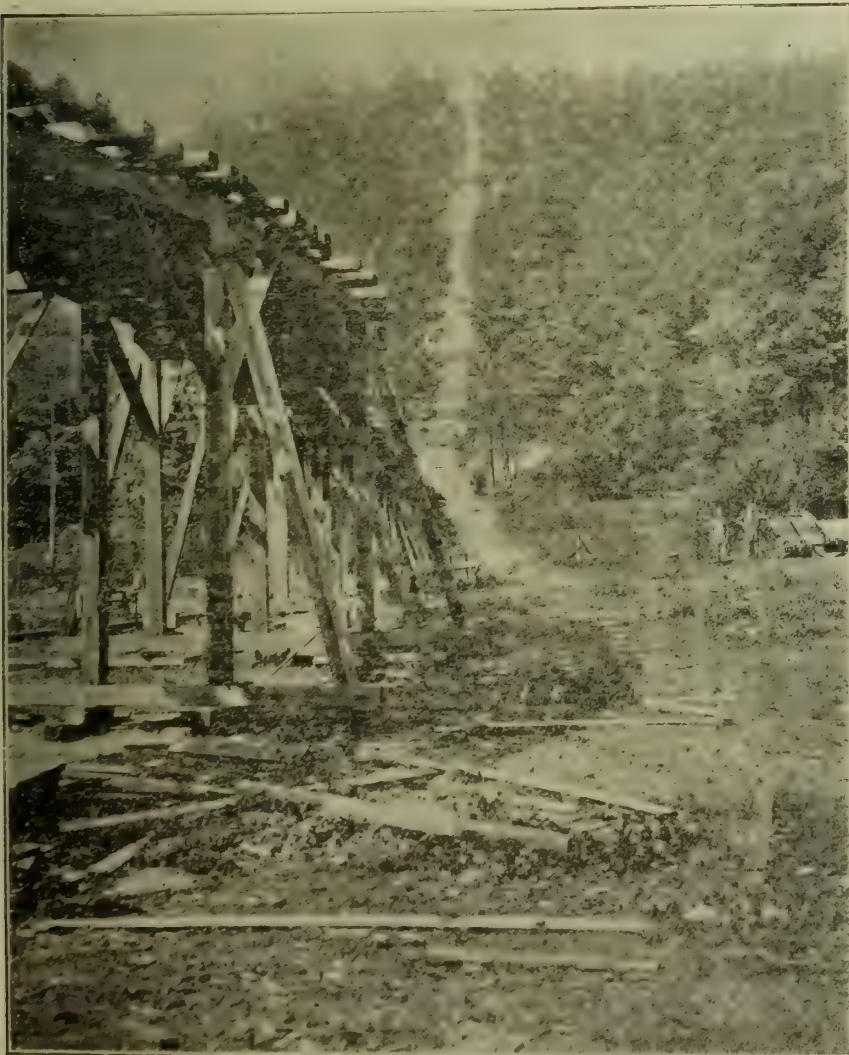


Figure 3—Foot of Incline.

including Rochester, Niagara Falls and Buffalo. The officers report doing a good business at present, and prospects for future are good. They are considering enlarging their storage capacity, though it already enables them to ship sand all the year round.

Scrap Shipment Held Up.

The shipload of crop ends and scrap iron which arrived at Philadelphia a week ago, was held up by customs officials pending the decision of questions involving the new tariff. It is the first shipment to arrive at an American port in time to come under the provisions of the new law.

In the new tariff scrap iron is taxed at different rates, according to quality. In the shipment held up there are several grades, but so mixed that it would take a squad of workmen a week or more to sort it. The importers deposited the duty at the maximum rates and will have to await the payment of their claim for rebate after sorting.

For a State Organ.

At Columbus, O., last week, the Ohio "Journal of Commerce" Company, with a capital stock of \$10,000, was incorporated by George E. Pomeroy, of Toledo, president of the Ohio State Board of Commerce; Allen R. Foote, of Columbus, Commission of the Ohio State Board of Commerce; S. P. Bush, of Columbus, president of the Buckeye Steel Castings Company, and others. The new publication will be the organ of the State Board of Commerce.

INDUSTRIAL WORLD

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PITTSBURGH, PA., OCT. 25, 1909.

THE LINES OF IRON AND STEEL CONSUMPTION.

EVERY time the iron and steel industry reaches a new high level of activity the question is asked, "Where is the material going?" It seems incredible, according to old standards, that so much material can actually be put into use. The question, however, is not one that should be asked in particular when the industry is active, it is indeed a more wonderful thing that so much tonnage should be used in times of depression. Thus in the 1893-8 depression, when industry was almost absolutely stagnant, the poorest year's production exceeded two-thirds of the best previous years' production, and the average of five years depression was as high as five preceding years of prosperity. Again, in the off year 1904, production was only a little less than in previous active years. The latest off year, last year, showed a production almost two-thirds as great as the previous best year. There seemed to be nothing doing at all, yet tonnage was really very heavy.

When industry revives, therefore, it is really not remarkable that an added demand should come to make new high records. If so much tonnage can be taken when business is stagnant it is not surprising that a third or a half more is called for when industry is very active, for it must not be forgotten that most of the iron and steel called for is put into permanent use; it is not consumption in the sense in which bread and butter are consumed. Production

of iron and steel could stop altogether, and we should still have our railroads, factories, bridges, steel buildings, and so on.

The iron industry is producing pig iron at the rate of 30,000,000 tons a year, by far the best rate ever attained. That is one-third of a ton per capita. Of course iron is lost in the transformation from pig iron to finished product. There is over five per cent of dead loss in carbon, silicon, etc., burned out of the iron in conversion into steel, and there are other dead losses in iron burnt or otherwise dissipated, while the scale which comes off in rolling generally goes back through the blast furnace and is weighed over again as pig iron. On the other hand, however, there is ore used in the open-hearth process, which goes into steel in addition to the pig iron used, and there is a considerable tonnage of old material which comes back to be reworked, either by direct melting in the open-hearth furnace or by reworking in the iron mill or simple rerolling. These accretions more than counterbalance the losses, so that it is perfectly safe to assume that when pig iron is being made at the rate of 30,000,000 tons a year, finished products like iron and steel castings and forged and rolled material are being carried forward to final finished forms for actual use at the rate also of fully 30,000,000 tons a year.

As noted, that is a rate of one-third of a ton per capita, or 750 pounds. It is not the increase in population which has made the increase in the total, for in 1890 our population was 76,300,000 and the record output of 9,200,000 tons of pig iron was made, this figuring out only 270 pounds per capita.

The general industrial activity of the country has increased in much greater ratio than the increase in population. Our total wealth has greatly increased, generally from one-third to one-half per decade, in much greater ratio than the increase in population, so that our wealth per capita has also been steadily and largely increasing. Measured by freight movement, our industrial activity has increased in still greater ratio, for the freight movement over railroads almost doubled 1890 to 1900, and from 1900 to 1907 there was an increase of considerably more than one-half.

The increase in the use of iron and steel is the continued product of a series of factors. We start with a steady increase in the population, then there is an increase in the wealth per capita, and then an increase in the industrial activity in proportion to the wealth per capita. Even this does not complete the list of factors the product of which is representative of the increase in the use of iron and steel, for beyond these fac-

tors is the factor representing the growth in the use of iron and steel in cases where formerly other materials were used.

There are no important uses of iron and steel in which the consumption has not remained as large, in proportion to general industrial activity, as formerly, and indeed it is not easy to find any of which it can be said that the consumption has not been increasing more rapidly than has our general business activity. Rails, the old standby of the steel industry, probably come more nearly into this category. The greatest railroad building is over, as the future increase in railroad trackage will be in smaller proportion than the increase in freight movement, because more and and better service will be gotten out of each mile of track. In this direction there might be thought to be an actual decrease, but such is hardly the case, for there is still much railroad trackage to be brought up to the latest standard in weight of rails, whereby more tonnage must be put down than to make up for wear. In steel cars the movement is relatively in its infancy, for the great work of the railroads is to increase train loads and that is to be done largely by the use of steel instead of wooden cars, and the proportion of steel to wooden cars in service is still comparatively small.

Many lines of iron and steel consumption show a much greater current increase than the mere increase in population, wealth or industrial activity. These are the new uses, but new itself is only a relative term. The steel office building is new in the sense that substantially all the steel office buildings have been erected within 20 years, while two-thirds or more have been erected within 10 years. Steel in automobiles is much newer in comparison. Steel in large tonnages for concrete reinforcing is much newer than steel for skyscrapers, while steel in large tonnages for sheet piling is still newer than steel for reinforced concrete.

The distribution into the different lines of the iron and steel produced in the next quarter century will be quite different from the distribution in the past quarter century. The great work hitherto has been in building factories, buildings and bridges, and our railroad transportation system. The next quarter century promises to be busy with work of a kind which has been seen but little in the past, the chief of the new lines being in power transmission, drainage of swamp lands, irrigation and internal waterways. Enormous sums of money are going to be spent along these lines. The use of machinery in permanent installations and in making the improvements will be very large, while there

will also be very heavy use of steel in the general line of structural shapes. Possibly the most important of these is sheet piling, which promises to put into employment enormous tonnages. Large sums can properly be invested in this latter material, for contractors can use it over and over again in different jobs.

So insignificant an item, from a tonnage standpoint, as tin plate promises an important tonnage. The time was when the great bulk of the tin plate consumed was in putting up the canning crops. Activity in tin plate manufacture simply followed the season. Towards the close of each year there was a very marked lull, to be terminated only when tin plate began to be accumulated for the forthcoming season. This has been changed, and, owing to the beclouding effect of the recent depression, the full measure of the change is only now being realized. The demand for tin plate for many other purposes, and particularly for putting up articles which are "canned" the year round, has increased very greatly, and much more than has the demand for canning crops. The result is that while in the past this period of the year saw very little activity in tin plate making, the mills are at present busy, and are practically making no tin plate at all for canning crops. Tin plate production at the present moment is at about 80 per cent the maximum rate ever attained at the height of the canning season, a condition which but a few years ago would have been considered simply impossible.

THE SCARCITY OF SCRAP.

INDICATIONS have become clearer in the past fortnight that the steel mills will have to come to the terms of sellers and pay higher prices for melting scrap than was expected. While the mills have some supplies they are not provided for an adequate distance ahead and the material in existence is tightly held. As high as \$18.50, delivered, has been paid for some small lots of heavy melting steel, delivered to the smaller consumers. Large consumers have turned down offers of small tonnages at \$18.25, but it does not follow from this action that they would not buy suitable tonnages at this price, for the reason that they must maintain their strategic position and to pay an advanced price for a small tonnage would injure their position while giving them little material.

At \$18.25 to \$18.50 delivered heavy melting steel compares with basic pig iron at \$17.25 to \$17.50, valley furnace, according to time of delivery, say an average of not far from \$18, delivered at the principal consuming points for heavy melting steel, so that scrap is

25 to 50 cents, on the average, above basic pig iron.

While there has been nothing approximating an absolute rule as to the relation between prices of heavy melting steel and basic pig iron, the general statement can be made that scrap has almost invariably been below pig iron. There has been wide variation in the spread, because when pig iron reached high prices scrap would not, in the majority of cases, follow it the whole way up. Thus in the first five months of 1907 basic pig iron averaged about \$22, valley, while heavy melting steel averaged \$18, delivered, the spread in delivered prices being between \$4 and \$5 a ton. In 1908, when the whole market was off, a large spread also existed, but this was due to the temporary condition that scrap was dumped on the market and early developed low prices, while pig iron was more or less rigidly held, the furnaces rapidly curtailing production so that the descent was gradual. In January, 1908, heavy melting steel had found practically its lowest level for the year, having commenced a decided slump in November. Basic iron, on the other hand, did not find its lowest point until October, 1908. In January, 1908, the average quotation on heavy melting steel was \$12.25, delivered, and the average quotation on basic pig iron \$16.17, valley, a spread of \$5 more in delivered prices. The following October, however, the average delivered prices of the two commodities came together, at between \$14.50 and \$15, delivered.

OUR RETROSPECT.

WE read in our issue of October 25, 1889, an even 20 years ago, that a carload of steel railroad ties was shipped from the Homestead works to the Chicago, Western & Indiana road. These were the ties which our retrospect of last week found had been made by the new tie machine just installed at the Homestead works, and which would make 90 ties an hour. The information is vouchsafed that the railroad mentioned had "practically decided to adopt these ties."

The success of aluminum manufacture in the United States is announced by this issue of 20 years ago. The product had been found equal to the best French metal for the various purposes. At the same time a reduction in the price of aluminum was announced, to \$2 a pound in lots of 1,000 pounds and over, prices grading up until \$14 was reached for lots under 50 pounds. It is noted that only a short time before the price had been as high as \$6 a pound. The reduction in price has continued, as the

present market is quoted at 23 to 24 cents.

Ferromanganese had taken a remarkable jump in price, designed as one of the most remarkable in the history of the trade. A table of prices (in 1889), is given, from which we extract the following, the figures referring to 80 per cent ferromanganese at Pittsburgh:

January 3.	\$55.00
August 1.	60.00
September 19.	66.00
October 3.	90.00

The sharp advance is attributed to the increase in steel making, and the shortage appeared to be temporary, for while \$90 was the price for prompt, metal could be had at \$81, Pittsburgh, for the first quarter of 1890. Editorial discussion then follows of the prospects for additional supplies of manganese ore from the United States, and it is admitted that the outlook was not a good one. This was well borne out, for 20 years later we are dependent chiefly upon imports for our supplies of manganese ore and ferromanganese.

An industrial item conveys the interesting intelligence that the Allegheny Bessemer Steel works the previous week produced 3,143 "tons" of rails. Net tons are probably meant, as statistics were then compiled in net tons. Swank's directory, compiled as of November 1889, rates this plant at 220,000 net tons of rails a year, and describes the equipment as comprising three soaking pits, and four trains of rolls, two 21-inch continuous and reversing, one 26-inch and one 30-inch. The plant had just begun work on an order for 70-pound rails for the Pennsylvania Railroad Company. Doubtless that was considered quite a heavy rail, even for the Pennsylvania. The plant had been put in operation the previous March. It was a rival to Carnegie, and there was fierce competition for a time, but in October, 1890, H. C. Frick concluded a deal for buying the plant for a million dollars. The million, by the way, was in bonds, and the plant paid for the bonds several times over before they became due. The plant was first remodeled to a convertible mill, making rails or billets at will, and for several years alternated these products according to the demands of the market. For many years the plant has made no rails, and many may not know that the Duquesne Steel Works of the Carnegie Steel Company, for that is the plant which the Allegheny Bessemer Steel Company completed in 1889, was originally a rail mill.

Pittsburgh.—Plants of United Planing Mill Company and R. W. McCall Lumber Company, destroyed October 20, with all stocks; combined loss \$90,000.

Market Conditions, Prices in Producing and Buying Centers

PIG IRON MARKET.

Threatened Shortage of Basic—Bessemer Firm at New \$19 Price.

PITTSBURGH — The market on Bessemer iron was rendered more tense on Thursday by the closing of a deal for the purchase of 20,000 tons of Bessemer, for delivery during December and January, by the Jones & Laughlin Steel Company. The seller was the Bessemer Furnace Association. The sale rather took the trade by surprise, since it had been given out that the Bessemer Association was virtually sold out to April 1. The price was \$19, Valleys, the figure established by the 20,000-ton sale to the Republic Iron & Steel Company a week earlier by the Bessemer Association.

This purchase seems to indicate that the Jones & Laughlin concern will not be in shape to start the first of its three furnaces at Aliquippa by the middle of next month, as had been announced. Indeed, it is said the company will get little capacity out of the first of the Aliquippa furnaces before January 1. The three furnaces will go in blast about a month apart.

All the big steel making companies in Pittsburgh district have now provided against contingencies by stocking up for a possible shortage of Bessemer, and the market on that grade may be expected to tighten on small sales during the next month. Within that time it is confidently predicted prompt Bessemer will reach the \$20 mark. When this report closed a week ago, the total sales of Bessemer at the \$19 rate had reached 32,000 tons, including the Republic's purchase. Last week's sales, exclusive of the Jones & Laughlin deal, aggregated probably 8,000 tons, all picked up by a local interest at \$19, in small lots. So that the total sales of Bessemer at the new \$19 price in 10 days' time aggregate 60,000 tons, all for delivery between now and April 1, and all out of what seemed 10 days ago to be a practically cleaned-up market.

Originally, it was the intention to blow in the three new Jones & Laughlin furnaces at Aliquippa in November, December and January. Indications are now that these dates have been postponed a month or six weeks. Of the five large steel interests that have been buying freely of Bessemer since the middle of August, it seems practically certain some of them will be in the market for additional purchases in December and January, at the latest, notwithstanding increased pig iron capacity that is be-

ing provided by some of them. These five concerns, the Republic, the Youngstown Sheet & Tube, the Jones & Laughlin, Cambria and Lackawanna, have taken over 150,000 tons of Bessemer out of the open market in 60 days. There is no way of increasing the present capacity. Two of the Shenango Furnace Company's stacks are running on Bessemer, and the third on basic, but the output of the latter is needed by the company. The two idle stacks in the Valleys, Struthers and Stewart, are to blow in, the former on November 1 and the latter on November 15, but both are merchant stacks.

None of these purchases have been made for their effect on the iron market. In every case the purchase was dictated by the bare prospect of a short stock of Bessemer. The Republic Iron & Steel is making provision for more pig iron capacity, but meantime its new tube plant will be in operation the early part of the year, and its new Youngstown open hearth plant also will be a large user of pig metal. The situation with the Steel Corporation is shown in the preparations to put in blast the two most expensive stacks in the West—those at Steubenville and Zanesville, O. There were small tonnages of off-grade Bessemer disposed of in scattering sales during the week—among them a transfer of 200 tons of high-silicon iron, sold by W. P. Snyder & Company, for prompt delivery, at \$20, Valleys.

St. Louis, Chicago and Ohio buyers, who came into Pittsburgh market for basic iron during the week, set the pace for local interests, and succeeded in crowding prices up 25 to 50 cents. The close of the week saw almost a flurry in basic locally, caused by the shortage in that grade in both the East and the West. One consumer in the middle West is said to have offered \$17.50, Valleys, for 15,000 tons of basic, first quarter delivery, but he could not be accommodated here. An Ohio steel company took 10,000 tons at \$18, delivered, from a furnace near Pittsburgh, which would be about \$17 furnace, for delivery next year. This price could not be duplicated now, however. Under the three-days' activity following the Western inquiries, basic rose to \$17.25 and \$17.50 Valleys, for prompt—the last-named figure being quoted also on shipments extending into the first quarter of 1910.

Foundry iron was firmer at \$17.25 Valleys, for prompt, and 1,500 tons of No. 2 grade, for delivery during fourth quarter, sold at that price. One lot of 300 tons was reported sold at \$17.50 for immediate shipment, though the previously

quoted price of \$17.75, Valleys, still stands for first quarter deliveries. There is considerable inquiry on malleable for next year, but nothing important has been done since Bessemer reached the \$19 mark. The trade looks to see malleable established at \$18, Valleys, though some can still be had at \$17.75. One sale of 1,000 tons of gray forge, for shipment this and next month, is reported at \$16.25, and another of the same tonnage, for delivery up to January 1, at \$16.50.

Ferro-manganese advanced during the week. It is no longer possible to do \$43, Baltimore, on prompt, and stocks are rather limited. Prices quoted during the week were \$43.50 and \$44, Baltimore, which is \$45.45 and \$45.95, delivered, Pittsburgh, for prompt and fourth quarter manganese. Ferro-silicon was dull during the week, remaining at \$64 and \$65, delivered, for 50 per cent. Consumers claim to be well stocked.

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NEW YORK—As a result of the spirited demand for basic in this market for two weeks past, \$19, delivered in Eastern Pennsylvania, is now generally quoted for first quarter basic. One sale of first quarter basic at \$18.75 is reported, but the market is going higher. One large interest, which wants 15,000 tons for first half, offered \$18.50, but sellers were firm in asking \$19. The threatened importations of basic have not as yet materialized, brokers evidently being timid over the prospects of disposing of a full cargo with the present narrow margin of profit.

* * *

PHILADELPHIA — Basic advanced during the week to an \$18.50 basis for prompt delivery. One steel making interest in this district bought 15,000 tons for delivery between now and April 1, at \$18 and \$18.50 delivered. Another sale of 12,000 tons for first quarter was noted at \$18.50, and a number of local furnaces are now holding at \$19. In the foundry grades, much buying was done during the week, in small lots, for shipment during the present quarter, and all the No. 2 iron available at \$18.50, delivered, seems to have been taken up. Several sales of small tonnages at \$18.75 for immediate shipment were reported. Quotations run to \$19 and \$19.50, delivered, for 1910 deliveries of No. 2X foundry, and in some instances, on inquiries for shipments throughout the first half, \$20, delivered, is asked. Virginia furnaces, which have been holding their foundry iron at \$16 to \$16.50 furnace, for the remainder of this year, are now

available at the new price level in this territory. A number of buyers still have negotiations open for foreign iron, though evidently more as a threat than with any intention of buying.

* * *

BIRMINGHAM—It is possible to buy Southern No. 2 foundry iron at \$15 for first half of 1910, one contract for 5,000 tons at that price having been closed with an Alabama interest during the week. The 5,000-ton contract mentioned contained a 50-cents-per-ton differential for the lower grades. Order books for the second quarter are not generally open. One or two sales of prompt iron at \$14.50, Birmingham, are said to have been made, though none of the local interests will admit quoting under the \$15 price. One of the large local furnace interests has practically withdrawn from the market for prompt deliveries.

* * *

CHICAGO—One large local interest is holding foundry iron firm at \$20, Chicago, for first quarter, though this is a prohibitive price at present. The shortage of basic, however, furnished the principal excitement among local brokers. One St. Louis interest purchased 5,000 tons in the St. Louis market, 5,000 tons more of Virginia basic, and is still in the market for a third 5,000-ton lot. One Chicago foundry and machine interest, which is in the market for a large tonnage of basic and foundry iron, is having some difficulty in filling its wants, about 16,000 tons being needed running through the first half. There are reports of some holdings of speculative iron still to come out in this market, but these cannot be confirmed. No. 2 foundry iron still is quoted at \$19 to \$19.50, for delivery through the fourth quarter. Some activity developed in malleable, inquiries reached 6,000 to 8,000 tons. The price quoted is \$18.50 and a shade higher.

* * *

CINCINNATI—Basic iron sales here during the week include several to Chicago consumers, and additional tonnage is pending. Cast iron pipe makers also are out in the Central West with an inquiry for a considerable tonnage of pipe making iron. One Southern interest is quoting Birmingham iron for the entire first half of 1910 at \$15, but not much business has been secured as yet past the first quarter. Northern Ohio basic is quoted at \$17.50 to \$18, at furnace. In the Hanging Rock district, some iron can be had for prompt delivery at \$17, Ironton, though the inclination is to raise this to \$17.50, and a number of the furnaces there are refusing to quote for next year's deliveries. In their special report for the Industrial World, from Cincinnati, Rogers, Brown & Company say:

Steel making irons have made a record

for themselves during the week, with result that the market is almost bare of offerings of any grade and prices are stiff. Foundry iron is active, and, although without further advance, is strong and the demand good for all brands that are offering for any deliveries prior to July 1, next. Some furnaces have again withdrawn from the market, considering their order books in satisfactory condition for the time being.

The blowing in and operation of new stacks, in the South particularly, is and will be seriously hampered by lack of labor which is prevailing not only in that district, but elsewhere.

The relatively high prices wanted for Southern iron seem to have made no difference in the demand for it by customers at those points which can be reached advantageously by them.

UNFINISHED STEEL.

Billets and Sheet Bars Practically Unobtainable—Situation in East.

PITTSBURGH—It is practically impossible to find any billets or sheet bars in the market for prompt delivery. The question of a supply for next year has become an interesting one. The question of price is secondary to finding the steel. Bessemer billets for spot shipment have sold the past week at \$27, and Bessemer open hearth billets at \$28 and \$28.50, maker's mill. Forging billets are held at \$30, maker's mill, in Pittsburgh. It is said a buyer came into the market during the week with an inquiry for 10,000 tons of forging blooms for delivery over four months, but it is doubtful if such a requisition could be filled in Pittsburgh district.

The steel bar market is pretty close to 1.45c, Pittsburgh. In a limited way, some tonnage has been placed at 1.40c, but only in exceptional cases. Sales at 1.50c, for early delivery, are not unusual. The quotation of 1.50c holds to buyers for first quarter. On sheet and tin bars, the independents have not yet been notified by the Carnegie Company as to what price will rule for first quarter delivery. Thus far the company has not fixed the price, and there is an impression abroad that it will have little of the product to offer in the open market after filling specifications on contracts now in existence. The supply of sheet and tin bars is much tighter than in several years. Sales of wire rods for prompt shipment have been made at \$32, Pittsburgh, but the market appears stronger, and some makers are holding at \$33. Steel mills will not name prices for first quarter on billets, sheet bars or rods. The impression is that sheet bars will go to \$29 or \$30 for next year.

Iron bars are very firm, and there are few sellers at 1.60c, Pittsburgh. The mills are not anxious to engage for deliveries far into the future, and everybody is occupied in making deliveries on specifications now pending. One

Pittsburgh mill advanced its base price on iron bars to 1.70c, mill.

* * *

PHILADELPHIA—Two large sales of billets have been made in Eastern territory, one to a wire company in the Chicago district, having been, it is asserted, for 10,000 tons. Reports from Buffalo say an offer of 1.50c, Pittsburgh, from a Buffalo concern for steel bars was turned down by the Pittsburgh mill. Aside from the one medium-sized lot of German billets already contracted for, there is little talk of further importation of semi-finished steel. Local producers have advanced billets about \$1 a ton, quoting rolling billets at not less than \$28 at mill. Steel bars are quoted at 1.60 to 1.65c, and refined iron bars 1.57c to 1.62c.

RAILS, TRACK MATERIAL.

New York Central Order Still Pending—Eastern Orders for Pittsburgh.

NEW YORK—The Winston Salem South Bound Railroad's rail order, for an amount not yet specified, will, it is announced, be placed one-half with an Eastern Pennsylvania mill and one-half with a Pittsburgh mill. The New York Central's rail order has not yet been made public. It is now said it will aggregate over 250,000 tons, this being probably the largest single order of the year. A large portion of this will go to the Carnegie mills at Pittsburgh.

The Bethlehem Steel Company took the Panama Railroad's order for 800 tons, let last week. A Mexican railway is inquiring for 4,000 tons light rails.

* * *

CHICAGO—Orders for standards at the Chicago and Gary mills, received during the week just ended, totalled 24,000 tons, all for 1910 delivery. Of this amount, 14,000 tons was from the Soo Line. All were for Bessemer, except about 2,000 tons. Fastenings, spikes, bolts and rail joints are also in demand at the Chicago mills.

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PITTSBURGH—The Lehigh Valley and Philadelphia & Reading are each in the market for 10,000 tons of rails, for delivery next year. Other inquiries from Eastern roads are pending, which are expected to aggregate a large total on the books of the Carnegie mills within a month. As yet, the Carnegie Company's books are far from filled for the remainder of the present year on standard rails, and if the contracts for 1910 business turn out heavy, the local mills may ask the roads to accept early deliveries. Orders for light rails for the week totalled about 3,000 tons. Independent mills reported a large business in light rails.

Orders for other track supplies have

increased largely. It is said that the car wheel companies bid fair to get behind in some of the large contracts now being run. The Schoen Steel Wheel Company, a Carnegie subsidiary, has increased its output to 700 wheels a day, and is said to have orders for nearly three months ahead, indicating something more than 50,000 car wheels ordered.

PLATES AND SHAPES.

Car Plants Press Steel Mills for Deliveries on Contracts—Advances in Chicago.

CHICAGO—Prices on plates and structural shapes have worked up 10 cents in the past 10 days, and are now quoted at 1.78c, Chicago. Even at these prices it very difficult to place any new business with the mills. Some tonnage has been booked for next year by nearly all the mills, but the claim is made that this business has been virtually forced on them as an accommodation for old customers. Mills have fallen, if anything, further behind in deliveries. Inability of the plate mills to turn out material for car construction has retarded the starting of the freight car department of the Standard Steel Car Company, but this plant will probably start work before the end of the month. The tonnage of the South Chicago mills is more than filled to the first of the year, and Chicago buyers went into Pittsburgh market this week in an effort to get prompt shipments.

Similar conditions hold in the structural trade. Any producer who could come into the market with a good tonnage of shapes for immediate delivery could command considerable above nominal prices. Much new work is being held up throughout the West by the slowness in deliveries by the mills. The American Bridge Company secured about 1,000 tons for new structural lettings during the week, at points in the West, including one contract at Chicago, one at Denver and one at Minneapolis. A part of the capacity of the American Bridge Company's local plant has not been working the past week, on account of the failure of deliveries from the mills.

* * *

PITTSBURGH—An influx of additional orders at the car plants has further complicated the plate situation in the steel mills. The Pressed Steel Car Company has increased its output at the McKees Rocks plant from 60 to 75 cars a day, and is preparing to start its Woods Run plant, on the Northside, about the middle of next month. The company has sold up its output completely for nearly six months ahead. Plates for prompt shipment are commanding premiums.

During the week contracts for a total of about 11,000 cars were awarded, the Pittsburgh companies getting over 6,000. The 50,000 to 60,000 tons of material for these cars will be furnished largely by the Jones & Laughlin and the Carnegie Steel mills. Deliveries on plates range from four weeks to three months behind. Mills are frequently asking 1.60c, though 1.50c, mill, still remains the minimum.

The week's transactions in structural lines were light, though the fabricating firms still were urging larger deliveries from the rolling mills, in order to clean up much that is hanging back because of lack of material. Some fancy prices for prompt shipments are reported, one transaction being at 1.70c, at maker's mill. Western fabricators were anxious to get prompt shipments came into the Pittsburgh district for shapes, but only a small part of the business offered was taken. The American Bridge Company took 3,000 to 4,000 tons of new business, in bridge work for a Western railroad. The McClintic-Marshall Company will fabricate a new viaduct at Wheeling, requiring 300 tons of material.

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NEW YORK—The American Bridge Company expects to reach an output of about 55,000 tons this month, which is much above the possible capacity of its shops, as estimated a year and a half ago. Difficulty in getting deliveries from the mills continues to be the chief source of complaint from the fabricating companies. The Pennsylvania Steel Company will furnish the 3,500 tons required for the new Interborough Elevated car yard, and 2,000 tons of Bethlehem shapes will be used in the erection of the Wells-Fargo stables at Jersey City. Few large structural contracts are pending. The Norfolk & Western divided its bridge work, 3,000 tons, between the Virginia Bridge Company and the Pennsylvania Steel Company. Inquiries from shipbuilding companies indicate a considerable tonnage of plates will be required by these interests next year.

PIPE, WIRE AND NAILS.

Merchant Pipe Advances—Wire Products Rising—Nails Higher.

PITTSBURGH—As a result of the increased demand, the National Tube Company, during the week announced an advance of one point, or \$2 a ton in line pipe, making the base discount on 2½-inch to 6-inch size, 77 off. A number of the independents had been quoting this advance for several weeks. No other class of tubular goods was affected. Mill capacities are more than comfortably filled. The announcement of the placing of the big orders for the Joplin, Mo., pipe lines, jointly with

the National Tube and the Spang-Chalfant interests two weeks ago, was followed by the placing of the contract for 102 miles in Texas, with the Spang-Chalfant Company. With the prospect of a rush for larger sized pipe for next year, some of the companies which have planned pipe line construction for 1910 are already reserving large tonnages of 16- and 18-inch line pipe, which is a rather unusual proceeding.

Leading rivet makers advanced their prices during the week about \$3 a ton owing to the continued higher prices for steel. This makes structural rivets, 3-4 inch and larger, larger, 205. For next year, \$2 a ton higher will be asked for wire nails.

The railroad spike market has worked up 10 cents per hundred pounds in ten days, on first quarter deliveries. Producers expect to reach the \$1.90 level for next year on railroad spikes. Quotations by local mills during the week were for \$1.80 for standard railroad spikes and \$1.85 for small spikes.

In cut nails several smaller dealers advanced their prices to \$1.85, base for carload lots, and \$1.90 for less than carloads.

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CHICAGO—There is a lull in tubing lines. Locomotive tubes especially are not following the present prosperous trend. Notwithstanding the lateness of the season, a good demand continues for cast iron pipe, several important lettings having been reported. James B. Clows & Company, of Chicago, have taken 1,500 tons in two lettings, one at Newark, O., and the other in South Dakota.

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NEW YORK—The New York contract for the proposed new high pressure water extension has not yet been awarded. Plans are being prepared at Portland, Me., for a \$1,000,000 extension to its water pipe system, which will require a large tonnage of iron pipe. Several small orders for iron pipe are pending at New England points.

Reports from Eastern cities show an increased demand for wire products, and jobbers' stocks in these lines are low.

SHEETS AND TIN PLATE.

Combine and Independents Booked Ahead for the Present Quarter.

PITTSBURGH—The American Sheet & Tin Plate Company and the independents are booked up for practically their entire output for tin plate for the present quarter. The independents are running practically full. The demand for tin plate for prompt delivery is heavier than the manufacturers have ever before experienced at this season of the year. The canning trade is still consuming a large tonnage. The

market is firm at the \$3.50 figure. The American Sheet & Tin Plate Company has broken the Amalgamated strike in the tin mills sufficiently to enable it to run all the capacity it desires, and the company is now devoting its attention not to increasing the number of mills but to perfecting operations at the mills already running. This week the company is working 20 mills out of the total of 30 at the Shenango plant at New Castle, which was the backbone of the strike. The total number of mills in operation is about 160. The United States plant, at Demmler, was partially shut down last week for repairs.

In sheets, the leading interests is refusing to contract beyond the first quarter, notwithstanding the pleas of the trade for contracts further into the future. The company is operating 82 per cent of its sheet mills, the only entirely idle plant being the Etna-Standard at Bridgeport, O., at which there has been no attempt at resumption since the strike of last April. The Mercer plant at New Castle, which recently opened, is running steadily. The Canton plant of the company was started last week. The demand for galvanized sheets for first quarter is especially strong.

THE SCRAP MARKET.

Heavy Melting Steel Scrap Passes \$18 Mark—Large Railroad Sales.

PITTSBURGH.—Heavy melting steel scrap sold up to \$18.25 and \$18.50 during the week just ended. One case is on record when an Ohio Valley mille refused an order for a small tonnage of heavy melting on learning that he could buy basic iron at Valley furnaces and have it delivered at less per ton net price than the scrap.

The Pennsylvania Railroad and Baltimore & Ohio lists bought new record prices. Some, at least, of the heavy melting steel went at \$18.50 on the lines. The Pennsylvania list aggregated about 20,000 tons, the Baltimore & Ohio offering about 5,000 tons. There was about 10,000 tons of rails on the Pennsylvania list.

The high prices ruling have made the larger steel concerns wary about closing for any more than their actual need. Malleable scrap is in special demand.

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CHICAGO.—Active buying of steel scrap for Gary is the feature of the market. A brokerage firm which make a specialty of steel scrap is buying through all points in the West to fill the demands at Gary. Wrought scrap has weakened during the week, while No. 1 cast and stove plate are strong. The railroad lists for the week have been light. There is a fair demand for borings,

and dealers are offering \$7.75 per net ton for shipment to Pittsburgh district. Heavy melting steel scrap commands \$17; car wheels \$18.50 and \$19; No. 1 railroad wrought \$16 and \$16.50 and No. 1 cast \$16 and a shade higher.

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PHILADELPHIA.—Consumers are offering \$18 for heavy melting steel scrap, but practically all the heavy melting steel on the railroad lists in rough figures brings 25c and 50c per ton higher than the nominal market. No. 1 railroad wrought is quoted at \$21 and \$21.50. The arrival of the first cargo of billet, rail and shape crop ends from England created some excitement, and more scrap and crop ends may be brought in. Old car wheels are quoted up to \$19.

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BIRMINGHAM.—The feature of the scrap market is the brisk demand for heavy melting steel scrap. One of the large dealers here was called on by a prominent Pittsburgh concern to furnish a considerable quantity of scrap steel rails at \$13.25, Birmingham. This he was unable to furnish, but another Birmingham dealer was able to deliver the goods, for which he received \$13.75, Birmingham. Just why this high price was paid is difficult to explain, unless it is in keeping with the exceptionally heavy demand for basic and Bessemer pig at stiff prices. No. 1 machinery is also in good demand, at \$12 to \$12.50. Old car wheels bring \$14 and No. 1 railroad wrought \$13.50 to \$14.

COKE PRICES VARY.

Considerable Tonnage Placed in Pittsburgh for Next Year Below \$3 Mark.

CONNELLSVILLE — The idea of the Connellsville producers as to next year's prices seems to be \$3 for first quarter, and \$2.90 for first half or longer. The \$3 price is not being adhered to on long-time contracts for furnace coke. One contract was closed during the week for 8,500 tons of furnace coke monthly over the first half at \$2.90 at ovens, this following the contract for upward of 25,000 tons monthly, same price and delivery, made a week ago.

Operators desire to sell for the entire year rather than for the half year, while furnaces are more disposed to buy for the half year only. There are several operators willing to do \$2.90 on the whole year, but who will not quote on the half year at all. Sales of furnace coke for delivery through this month and next have been made at \$2.85. Several long-term contracts are based on the selling price of Bessemer, though the ratio is not made public.

The "Courier's" reports for the week ending October 16, show 34,122 ovens in blast, a loss as compared with the week

previous, when 35,293 ovens were in blast. The production for the week ending October 16 was 427,313 tons as compared with 437,829 tons the week before. The loss was due to shortage of labor and failure to draw some ovens promptly. There was a clear gain in shipments of 275 cars, however. While there is general complaint in the West Virginia field over the car shortage the coke companies in the Connellsville region are being supplied with all that they need. Only one company last week complained of a car shortage.

English Expectations.

In its report from Middlesbrough, London "Engineering," of current date says:

Inquiries from the United States are rather numerous, and the American demand is for both Cleveland and hematite iron, as well as spiegel. The latter is regularly sent to the States, but it is long since Cleveland or hematite was sold to the other side of the Atlantic. Further business with America is confidently anticipated. Several parcels of scrap have been sold to the States. The most unsatisfactory feature of the market continues to be the fact that production of pig iron is in excess of requirements, with the result that stocks go on increasing; but it is hoped that this will be altered by a continuation of American buying.

Blast furnacemen's wages in the Middlesbrough district have been advanced. The average net selling price of No. 3 Cleveland pig iron for July, August, and September has been certified as 48s. 3.54d per ton, as compared with 47s. 6.71d for the previous quarter; and, in accordance with sliding-scale arrangements, blast-furnacemen's wages are raised by 1 per cent, thus raising wages from 19.25 per cent above the standard to 20.25 per cent above the standard. The advance took effect from October 2.

"Engineering's" Sheffield correspondent observes:

There is a complete lull in the local iron market. This is partially accounted for by the extensive and hasty buying a few weeks ago, but as makers are well sold for several months, they are keeping up their prices. The bar iron and finished iron branches are extremely slack. By contrast with the depressed state of home trade the consular returns of the value of exports from this district to the United States during the past quarter is distinctly encouraging. In many ways the quarter was exceptional, as in the early part there was a rush to get steel into the States before the new tariff came into force.

Advance by Roll Makers.

The National Roll & Foundry Company, Farmers Bank building, Pittsburgh, has announced an advance to card list, or $\frac{1}{4}$ cent per pound, for deliveries in 1910. A general advance is about to be announced by manufacturers of rolling mill rolls.

Range of Weekly Quotations of Pig Iron

PIG IRON

At Pittsburgh—	Oct. 23.	Oct. 16.	Oct. 11	Oct. 4.	Sept 25.	Sept. 18.	Sept. 11.
Bessemer	19.90	19.90	19.40	18.90	18.90	18.40	17.90
Basic	18.15@18.90	17.90@18.40	17.90@18.40	17.40@17.90	16.90@17.40	16.90@17.40	16.65@16.90
No. 1 Foundry	18.65@19.15	18.65@19.15	18.65@19.15	17.90@18.40	17.40@17.90	17.40@17.90	17.15@17.65
No. 2 Foundry	18.15@18.65	18.15@18.65	18.15@18.65	17.65@17.90	17.15@17.65	17.15@17.40	16.65@16.90
Malleable Bessemer	17.90@18.90	17.90@18.90	17.90@18.15	17.65@18.15	17.15@17.40	17.15@17.40	17.15@17.40
Gray Forge	17.15@17.65	17.15@17.65	17.15@17.65	16.90@17.15	16.65@16.90	15.90@16.15	15.90@16.15
Low Phosphorus	21.00@21.90	21.00@21.90	21.00@21.90	20.00@20.90	20.00@20.90	20.00@20.90	20.00@20.90
Ferro Silicon, 50 per cent	64.00@66.00	64.00@66.00	64.00@66.00	64.00@66.00	64.00@66.00	64.00@66.00	64.00@66.00
Ferro Silicon, 10 per cent	25.00@25.50	25.00@25.50	25.00@25.50	25.00@25.50	24.00@25.00	24.00@25.00	24.00@25.00
Silicon Spiegel, 10 to 12 per cent ..	26.00@28.00	26.00@28.00	26.00@28.00	26.00@28.00	25.00@27.00	25.00@27.00	25.00@27.00
Spiegeleisen	25.50@30.00	25.50@30.00	25.50@30.00	25.50@30.00	25.50@30.00	25.50@30.00	29.50@30.00
Ferro Manganese	34.95@36.95	34.45@47.45	45.45@47.45	44.95@46.95	45.95@46.95	44.45@46.45	44.45@45.45
At Virginia Furnaces—							
Basic	16.50@17.00	16.00@17.00	16.00@17.00	16.00@17.00	16.50@17.00	16.00@16.50	15.50@16.50
No. 1 X	17.00@18.00	17.00@18.00	17.00@18.00	17.00@18.00	17.00	16.50@17.00	16.50@17.00
No. 2 X	16.50	16.50	16.50	16.50@17.50	16.50	16.00	15.50@16.00
No. 2 Plain	16.00@16.25	16.00@16.25	16.00@16.25	16.00@16.25	16.00@16.25	15.50@15.75	15.00
Gray Forge	15.50@15.75	15.50@15.75	15.50@15.75	15.50@15.75	15.50@15.75	15.00@15.25	14.50@15.00
At Birmingham—							
No. 1, Foundry	15.00@15.50	15.00@15.50	15.00@15.50	15.00@15.50	15.00	14.50	14.50
No. 2, Soft	15.00	15.00	15.00	14.50@15.00	14.00@14.50	14.00@14.50	14.00
No. 2, Foundry	15.00	15.00	15.00	14.50@15.00	14.50	14.00@14.50	14.00
No. 3, Foundry	14.00@14.50	14.00@14.50	14.00@14.50	14.00@14.50	13.50@14.00	13.00@13.50	13.00@13.50
No. 4, Foundry	12.50@13.00	12.50@13.00	12.50@13.00	12.50@13.00	12.00@12.50	11.50@12.00	11.50@12.00
Gray Forge	14.00@15.00	14.00@15.00	14.00@15.00	13.50@14.50	13.00@14.00	13.00@14.00	13.00@14.00
At Philadelphia—							
No. 2X Foundry	18.50@19.00	18.50@19.00	18.50@19.00	18.50@18.75	18.00@18.50	18.00@18.50	17.75@18.25
Basic	18.00@18.50	18.00@18.75	18.00@18.75	18.00@18.75	18.00@18.75	18.00@18.75	18.00@18.50
Gray Forge	17.00@17.50	17.00@17.50	17.00@17.50	17.00@17.50	17.00@17.50	16.75@17.25	16.75@17.25

STEEL.

Tons of 2,240 lbs., at Pittsburgh—							
Bessemer Billets	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	25.00@25.50
Open Hearth Billets	27.00@28.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	26.00@27.00
Forging Billets	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00
Sheet and Tin Bars	28.00@30.00	28.00@30.00	27.00	27.00	27.00	27.00	25.00@27.00
Bessemer Steel Rails	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Open-Hearth Steel Rails	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Light Steel Rails—							
25 to 45 lbs.	28.00	28.00	28.00	28.00	28.00	28.00	28.00
16 and 20 lbs.	29.00	29.00	29.00	29.00	29.00	29.00	29.00
12 and 14 lbs.	30.00	30.00	30.00	30.00	30.00	30.00	30.00
8 lbs.	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Bessemer Wire Rods	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Open-Hearth Wire Rods	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Muck Bar, all pig iron	28.00	28.00	27.00	27.00	27.00	27.00	27.00

FINISHED PRODUCTS.

[illegible]

26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	29.00@30.00
28.00@29	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	30.00@32.00
32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	32.00@33.00	34.00@36.00
44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	50.00
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	71.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	32.00
30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	34.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	32.00
30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	34.00
29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	33.00
29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	32.00
28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	32.00
30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	30.00@31.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	34.00
28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	28.00@30.00	27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	32.00
30.00	30.00	30.00	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	28.00@29.00	34.00
30.00	30.00	30.00	30.00	30.00	29.00@30.00	29.00@30.00	29.00@30.00	29.00@30.00	36.00
24.00	24.00	24.00	24.00	24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	28.00
27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	28.00
27.00@28.00	27.00@28.00	27.00@28.00	26.00@27.00	26.00@27.00	25.00@26.00	25.00@26.00	25.00@26.00	24.00@25.00	28.00
30.00	30.00	30.00	29.00	29.00	20.00	20.00	20.00	28.00@29.00	28.00

STEEL PLATES.

Base prices, tank quality, ¼-in. thick, per 100 lbs., f. o. b., Pittsburgh:

6¼ to 100 inches wide\$1.50

Extras over base price—

3-16 inch thick .....	.10
Gauges 7 and 8 .....	.15
Gauge 9 .....	.25
Gauges 10 and 11 .....	.25
Circles .....	.20
Sketches .....	.10
Boiler and Flange quality .....	.10
Marine Steel .....	.40
Widths over 100, to 110 in .....	.05
Widths over 110, to 115 in .....	.10
Widths over 115, to 120 in .....	.15
Widths over 120, to 125 in .....	.25
Widths over 125, to 130 in .....	.50
Widths over 130 in	1.00

IRON AND STEEL SCRAP.

Old steel rails, re-rolling..	\$18.50	\$19.00
Old steel rails, remelting..	18.00	18.50
Steel axles	21.50	22.00
Heavy melting scrap	18.00	18.50
Low phosphorus	21.50	22.00
Sheet scrap	16.00	16.50
No. 1 wrought scrap	19.00	19.50
Machine shop turnings ..	13.25	13.50
Cast borings	11.50	11.75
No. 1 cast	16.75	17.25
Old car wheels	18.75	19.00
Old iron rails	18.50	19.00
Axle turnings	14.00	14.50
Railway malleable	17.00	17.50

TIN AND TERNE PLATES.

Official prices, f. o. b., Pittsburgh—
Coke tins:

14x20, I. C.	\$3.65
14x20, 100 lbs.	3.50
14x20 95 lbs.	3.45
14x20, 90 lbs.	3.40

Charcoal tins:

A Grade, 14x20, I. C.	4.15
A Grade, 14x20, 100 lbs.	4.00

Ternes:

20x28, I. C.	6.80
20x28, 200 lbs.	6.50

STEEL RAILS.

Fifty pounds and Heavier—

500-ton lots and over	\$28.00
Car load lots	30.00
Less than car load lots	32.00

Light Rails—

12 and 14 pounds	\$30.00
16, 20 and 25 pounds	28.00
30 and 35 pounds	28.00
40 and 45 pounds	28.00

Relaying Rails

Subject to inspection, f. o. b. Pitts-		
burgh:		
Stand't 50 lbs. & heavier..	\$23.00	\$23.50
25 to 40 lbs.	24.00	24.50
16 to 20-pound rails	24.50	25.50
12-pound rails	26.00	27.00

STEEL SHEETS.

Official prices, per 100 lbs., f. o. b., Pittsburgh—

Guage.	Black.	Galv.
30	\$2.35	\$3.55
29	2.30	3.45
28	2.30	3.35
27	2.25	3.15
25-26	2.20	2.95
22-24	2.15	2.75
17-21	2.10	2.60
15-16	2.05	2.50
13-14	2.00	2.40

Blue Annealed.

10 and heavier	\$1.70
11-12	1.75
13-14	1.80
15-16	1.90

Corrugated Roofing.

Per square, 28 gauge, f. o. b. Pitts-	
burgh—	
Painted	\$1.55
Galvanized	2.80

WIRE AND NAILS.

Prices to jobbers in car load lots, per 100 lbs.; retailers 5 cents additional:

Wire nails	\$1.80
Plain wire	1.60
Painted barb wire	1.80
Galvanized wire	2.10

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per cent pure are held at 24c per pound in ton lots.

For small lots of 100 pounds and over advances of 3c per pound are charged.

Rods and wire	base price 31 cents
Sheets	base price 33 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

	Per Ton.
Mine-run	\$1.10@1.20
¾-inch lump	1.20@1.30
1¾-inch lump	1.30@1.40
3-inch lump	1.55@1.65
1¾-inch nut	1.10@1.20
¾-inch slack .....	.55@.65

At Buffalo—

	Pgh.	Frep't
Mine-run	\$2.35	2.05
¾-inch lump	2.45	2.15
1¾-inch lump	2.55	2.25
¾-inch slack	1.85	1.70

At Cleveland—

	Pgh.	No. 8
Mine-run	\$2.10	\$1.80
¾-inch lump	2.20	1.90
1¾-inch lump	2.25	2.00
1¾-inch nut	2.10	1.80
¾-inch slack	1.55	1.45

At Detroit—

	Pgh.	No. 8
Mine-run	\$2.50	\$2.05
¾-inch lump	2.60	2.15
1¾-inch lump	2.70	2.25
1¾-inch nut	2.50	2.05
¾-inch slack	2.00	1.65

At Chicago—

	Pgh.	No. 8
Mine-run	\$3.00	\$2.55
¾-inch lump	3.10	2.65
1¾-inch lump	3.20	2.75
1¾-inch nut	3.00	2.55
¾-inch slack	2.45	2.25

MERCHANT PIPE.

Base discounts, car load lots, subject to one point and 5 per cent extra to large jobbers.

	Steel	Black. Galv
¾ and ¼-inch	71	55
¾-inch	72	58
½-inch	75	63
¾ to 6-inch	79	69
7 to 12-inch	74	59
Extra strong plain ends—		
¾ to ¾-inch	64	52
½ to 4-inch	71	59
4½ to 8-inch	67	55
Double extra strong—		
½ to 8-inch	60	49

WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe car load prices to consumers; prices to jobbers one point and 5 per cent.

¼-inch	66	
⅛ and ⅜-inch	67	53
½-inch	70	58
¾ to 6-inch	74	64
7 to 12-inch	69	52
Extra Strong and Plain Ends—		
⅛, ¼ and ⅜-inch	59	47
½ to 4-inch inclusive	56	54
4½ to 8-inch, inclusive	62	50
Double Extra Heavy plain Ends—		
½ to 8-inch, inclusive	55	44

BOILER TUBES.

	Steel	Iron
1 to 1½ inches	49	43
1¾ to 2¼ inches	61	43
2½ inches	63	48
3¾ to 5 inches	69	55
6 to 13 inches	60	43
Less than car load lots, two points less.		
2½ inches and smaller, over 18 feet, 10 per cent, net extra.		
2¾ inches and larger, over 22 feet, 10 per cent net extra.		

MERCHANT STEEL.

Cold rolled and ground shafting, 60 per cent off, car load lots; 56 per cent off less than car load lots; delivered in base territory:

Planished Tire Steel	\$1.40@1.50
Iron finish, up to 1½x½ in. ..	1.35@1.45
Iron finish, 1½x½ in. and over	1.20@1.30
Toe Calk Steel	1.70@1.80
Railway Spring Steel	1.75@1.85
Cutter Shoe	1.95@2.05
Flat Sleigh Shoe	1.55@1.65
Crucible Tool Steel	7.00@8.00
Open-Hearth Spring Steel ..	2.05@2.30

Freight Rates On Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig Iron, from Virginia furnaces to Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	\$2.35	\$3.60	\$3.20	\$2.35	\$3.30	\$3.35
Bristol		3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.35	3.60	3.20	3.00	3.95	4.00
Kayula, Ivanhoe, Rural Retreat ...	2.35	3.60	3.20	3.40	4.35	4.40
Pulaski, E. Radford, Max Meadows. 2.90	2.35	3.60	3.20	3.25	4.20	4.25

Pig Iron from Birmingham, Ala., tons of 2,240 lbs. to—	Cleveland	1.65
Boston, by water	Columbus	1.65
Chicago	Cincinnati	2.10
Cincinnati and Ohio River	Chicago	2.25
Cleveland	East St. Louis	2.80
Milwaukee and Northwest	Hamilton, Ont.	2.20
New York, all rail	Joliet	2.65
New York, rail and water	Louisville	2.05
Philadelphia, all rail	New York	2.85
Philadelphia, rail and water	Pittsburgh .....	.75
Pittsburgh	Philadelphia	2.15
St. Louis	Richmond, Va.	2.95
	Toledo	2.10
	Valley Furnaces	1.85
	Milwaukee	1.35
	Detroit	2.55
		2.00
		2.25

To Pittsburgh from—	Dunbar Furnaces .....	.85
	Kittanning Furnaces .....	.60
	Scottdale Furnaces .....	.85
	Valley Furnaces .....	.90
	Wheeling .....	.90
Valley Furnaces to—		
Cleveland .....		.90

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	Billets.
Baltimore	\$2.15	\$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville .....	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va. ....	.90	1.00
Youngstown .....	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango Valleys ..	1.00	
Wheeling	1.00	

COKE.

From Connellsville region, per 2,000 pounds to—	Furn.	Fdry.
Buffalo	\$1.65	\$1.90
Baltimore	2.15	

FINISHED PRODUCTS.

Finished Steel Products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire, nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—	
Albany .....	.16
Buffalo .....	.11
Boston .....	.18
Baltimore .....	.14½
Canandaigua .....	.13½
Cleveland .....	.10
Columbus .....	.12
Cincinnati .....	.15
Chicago .....	.18
Harrisburg .....	.14½
Louisville .....	.18
New York .....	.16
Norfolk .....	.20
Philadelphia .....	.15
Rochester .....	.11½
Richmond .....	.20
Scranton .....	.15
St. Louis .....	.23
Washington .....	.14½
To Pittsburgh from—	
Mahoning and Shenango Valleys..	.05
Wheeling .....	.05

COAL.

Coal Rates from Mines—	
To Ashtabula	\$1.00
To Allegheny, Pan'dle Ft. W. trk...	.43
To Allegheny, West Penn tracks..	.48
To Allegheny, B. & O. ....	.35
To Pittsburgh, P. R. R. Main Line..	.43
To Pittsburgh, B. & A. V. Div...	.48
To Pittsburgh, B. & O. ....	.33
To Valleys .....	.70
To Buffalo	1.25
To Cleveland	1.00
To Detroit	1.40
To Chicago	1.90
To New York, gross ton	2.25
To Philadelphia, gross ton	2.00

From Freeport—	
To Buffalo	1.10
For Lake Shipments— Cargo. Fuel.	
To Ashtabula .....	.88
To Cleveland .....	.88
To Erie .....	.88

West Virginia rates from mines—	
To Chicago	1.90
To seaboard points, gross ton	1.80

From No. 8, of Ohio—	
To Cleveland .....	.90
To Chicago	1.65
To Detroit	1.15

TIN PLATE.

	C.L.	L.C.L.
Per 100 lbs., Pittsburgh to—		
Boston, Mass	18	21
Albany, N. Y.	16	19
Baltimore, Md.	14½	17½
Birmingham, Ala.	41	68
Cleveland, O.	10	13
Columbus, O.	12	15
Cincinnati, O.	15	18
Concord, N. H.	18	21
Charlotte, N. C.	39	61
Charleston, S. C.	33	70
Charleston, rail and water..	23½	31
Covington, Ky.	15	18
Chattanooga, Tenn	33	65
Chicago, Ill.	18	21
Canadaigua, N. Y.	13½	16
Des Moines, Ia.	37½	48½
Detroit, Mich	15	18
Denver, Mich	84	118
Dover, Del.	17	20
Buffalo, N. Y.	11	13
East St. Louis	22½	26
Hartford, Conn.	18	21
Indianapolis, Ind.	17	19½
Louisville, Ky.	18	21
Montpelier, Vt.	21	24
Minneapolis, Minn.	32	42
New York	16	19
Norfolk, Va.	20	24
Natchez, Miss.	32	61
Portland, Me.	18	21
Providence, R. I.	18	21
Philadelphia, Pa.	15	18
Richmond, Va.	20	24
Rochester, N. Y.	11½	13½
Syracuse, N. Y.	13½	16
St. Louis, Mo.	22½	26
Terre Haute, Ind.	18	21
Topeka, Kas.	54½	68
Trenton, N. J.	16	19

Electric Welding for Bonding Electric Railways.

TO keep the conductivity of the track return circuit high and eliminate all trouble from defective bonds, some street railway managers have installed return cables. This is an expensive solution of what is regarded as a serious problem to all electric railway systems which employ the track for the return circuit.

An electric welding outfit has been perfected which insures perfect bonding at a very low cost. By perfect bonding is meant bonds which will not deterior-

at from moisture, but will hold indefinitely because a true weld is obtained between the bond and the rail.

There are two methods adopted to obtain the perfect weld, each of which requires a satisfactory flexible bond. These methods are electric welding and, so-called, copper welding.

In the first method a heavy current is passed through the bond and the rail at the point of the weld, heating both to a sufficiently higher temperature to weld them together. This requires a current of approximately 2,000 amperes at five volts. This is obtained from the

trolley line by means of a Westinghouse standard 18 K. W. rotary converter and a special transformer which lowers the voltage to the required amount.

The secondary terminals of the transformer are one of copper and one of carbon, so arranged as to clamp the bond and rail at the point of the weld. The flow of current heats the carbon terminal to incandescence and brings the rail and the copper bond to the welding point in from 45 to 60 seconds.

When the bonding is to be done by

supplied by the Electric Railway Improvement Company, of Cleveland, Ohio. It will be noticed that the rotary converter may be used as a motor to propel the car. As high a speed as 30 miles per hour may be attained.

In order to remove the car from the rails to prevent interruption to the traffic, a jack-screw is fixed under the center of the car. The weight of the equipment on the car is distributed to balance about the center, so that it is an easy matter to turn the car and roll it to one side and allow a regular car to pass. Economical bonding may be done on lines maintaining a five-minute service.

For grinding the rail before welding, a small electric grinder with leads and starting box complete is provided.

For rebonding lines in city streets, this apparatus requires the removal of the paving blocks from a space of but a few inches wide and as long as the bond itself, which makes it economical for either new or old work.

Cement Trade Coins a Word.

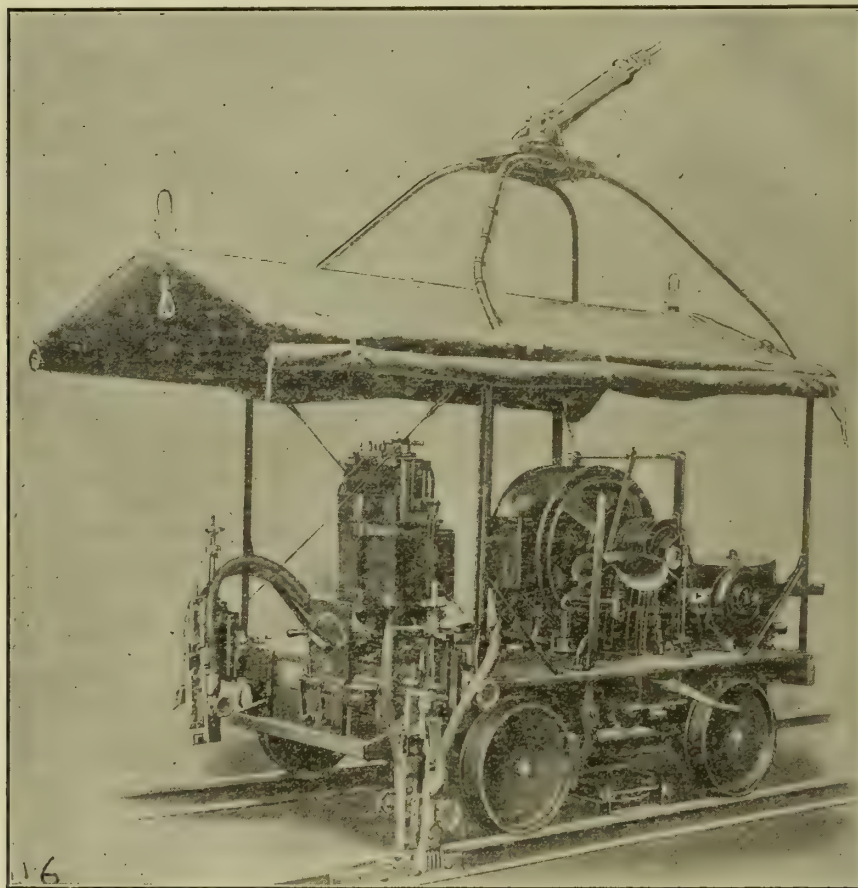
A correspondent of the Industrial World writes: There is a growing tendency to call the larger particles that go into concrete with sand and cement, aggregates when in fact the whole mixture is the aggregate or sum. A very close study of the word fails to reveal any definition that would imply that it could be used as a name of an object and since the broken stone, slag, cinder or other things put in with the cement and sand are objects, such a term that means the whole is out of place. Hence, I suggest the word "copard" to mean anything of a larger size that will be used in concrete with sand and cement.

Copards are the co-partners of the sand and cement to make up the aggregate or sum total which is the concrete. Using the word in a sentence like this:—"The copards in the concrete mixture were slag" or "A washer for copards should be built near the source of supply." Or, if no new word is needed, do not use aggregate, as it is confusing and improper.

John A. Roebling's Sons Company, Trenton, N. J., is planning an addition to its plant in that city.

The Corbin Screw Company, is making improvements on its New Britain, Conn., property that will cost about \$115,000.

The McNeil Boiler Company, of Akron, Ohio, has increased its capital stock from \$100,000 to \$150,000. The company is making considerable improvements.



Electric Welding Outfit Fitted Up by the Westinghouse Electric for the Electric Railway Improvement Company, of Cleveland, Ohio.

copper welding, molten copper is poured into a suitable mold and first heats the bond and the rail and then forms the weld. The mold is of such shape that a large reservoir of metal is formed before the bond itself is covered. This insures thorough heating of the parts and is not wasteful of copper as the reservoir is readily chiseled off after hardening, as but a small neck connects it to the weld itself. This welding is particularly adapted to heavy bonds, return feeder cable, and around special work.

The illustration shows the outfit as

Progress in Motor-Car Building For Railroad Passenger Service

GRADUALLY INCREASING SIZE AND CAPACITY—THE McKEAN MOTOR CAR—SOME DIFFICUL- TIES TO BE OVERCOME—NEWS OF THE RAILROADS.

The tests made on Eastern railroads during the last two weeks of the new Strang gasoline electric motor car, made at a plant in New Jersey, and the older Sheffield car, manufactured by the Sheffield Car Company, at Three Rivers, Mich., have aroused considerable interest on the part of railroad and machinery men in the possibility of the adoption of the motors by steam railroads in the East, for the handling of way traffic.

The Strang car was tried out on the tracks of the Lackawanna and the New York Central, and the Ganz car on the Pennsylvania. No announcement has been made by officials of either of these companies as to the outcome of the tests. Meantime, both cars are now giving exhibition runs on New England roads. A Sheffield car is now in regular service on the Bradford branch of the Erie Railroad, between Bradford, Pa., and Salamanca, N. Y., having been installed about a month ago, with the object of giving it a test under actual working conditions. A Ganz steam motor car, built by the Railway Auto Car Company, also is being tried out by the Rock Island.

The first use to which the gasoline engine was put on the railways of the United States was the maintenance of signals. Situated every 10 or 15 miles, as the circumstances demand, are miniature power stations, consisting of one-cylinder, two-cycle, 10-inch diameter, 15-horsepower, driving 10-kilowatt direct-current generators, which intermittently charge batteries located at the signals through a charging line. This system is in use on the Lake Shore & Michigan Southern and on the West Jersey & Sea Shore railroads. The Union Pacific railroad use charging-stations every 40 miles in the State of Nebraska, and less frequently in the less settled districts. The cells are brought to the small power-station for re-charging each month. Small 4-horsepower two-cycle engines are sufficient for this work.

About 10 years ago the track velocipedes used for inspection and signal work were replaced largely by the Sheffield motor-cars, made at Three Rivers, Michigan. These cars were at first single cylinder (5 inches in diameter) four-cycle, and with make-and-break ignition, which gave considerable trouble. At present these cars are two cylinders,

vertical (3 inches in diameter) four-cycle, with jump-spark ignition. These cars can run at upward of 30 miles per hour, and are usually satisfactory. In cold weather, however, the heavy grade (specific gravity 0.77) of gasoline gives trouble.

These trucks were also used on inter-urban electric lines for inspection, repairs, and in one case, if not more, for the delivery of morning papers to outlying districts.

A more striking innovation was the introduction some five years ago of an inspection-car, accommodating 10 passengers, carried on a four-wheeled truck and driven by a two-cylinder, 12-horsepower, four-cycle motor through a planetary gear. The speed attained was up to 60 miles per hour, and it was thus able to make passenger time when running as an extra. This car was credited with a run of 437 miles for a consumption of only 231 gallons of gasoline, and of running over two miles for one cent operating expenses, exclusive of wages. The car weighs 1,650 pounds; the "Olds" Company built cars lighter, seating four people.

In 1905 the Rock Island lines had a Sheffield car running for summer passenger service at Searcy, Ark. The car carried 20 passengers, weighed 7,000 pounds, and attained a speed of 30 miles per hour. The drive was by chain through a planetary transmission. In one month this car carried over 5,000 passengers.

In Nebraska, Kansas, Texas and other Mid-West States, the track is frequently obliterated by weeds, and recently the Rock Island and other railways have installed gasoline weed-burners.

A typical weed-burner is a 3-cycle 8-inch diameter by 10 inch stroke engine, mounted longitudinally on a four-wheel truck, which is chain-driven through a gear clutch and a conical friction clutch. At 50 horsepower delivered the car should make 20 miles per hour, and for actual weed-burning about two miles per hour to four miles per hour.

The burner is hauled behind, and has two wings, which can be lowered. The center casting and wings are made red-hot by 100 gasoline bunsen flames.

The first successful attempt to compete with the locomotive for branch and local service was made by the Union Pacific company in 1905. As this car had many of the features of later designs, a complete description is unnecessary. It was a four-wheeled car driven by a six-cylinder six-inch by 8-inch vertical four-

cycle reversible engine. The engine of this and the subsequent cars, up to the seventh, were made by the Standard Motor Construction Company, of Jersey City. The appearance of this car was similar to that of a small street car. The success of these experimental cars was such that, in order to do business with other railways, the McKeen Motor-Car Company was organized.

The cars now being manufactured are mostly of these dimensions:

55-foot car—Total wheel base, 37 feet 9 inches; height, rail to roof, 12 feet 1 inch; width over all, 10 feet 3 inches; total weight, 60,000 pounds; seating capacity, 75; luggage, none.

70-foot car—Total wheel base, 44 feet 2 inches; height, rail to roof, 11 feet 9 inches; width over all, 10 feet 2 inches; total weight, 68,000 pounds; seating capacity, 70; luggage, 9 feet 4½ inches, baggage; 7 feet mail.

The engine for both is a six-cylinder, 10-inch in diameter, with a 12-inch stroke, reversible four-cycle, 200 horsepower; it is started by compressed air; the engine room is in front.

These cars are of steel, the floor, side, and roof members being standard angles and channels covered with plate. There are two trucks, the front as motor truck having 9-feet 5-inch wheel base, 42-inch drivers in front, and 35-inch trailers, the rear truck has a wheel-base of 7 feet, with all wheels 35 inches in diameter. Wind resistance is reduced by a wedge-shaped front and a turtle back roof.

The most striking superficial features of the cars are the arm-doors, which are 30-inch, portholes of aluminum, which can be hermetically sealed. The ventilation is downward by both pressure and suction vents. In winter the car is heated by the jacket water, which is more than sufficient even in weather below zero.

Compressed-air brakes are used, the air tanks being of 50 cubic feet capacity. This air is also used for starting the engine by means of special inlet air-valves, mechanically operated, with automatic exhaust. The friction-clutch and gear clutch are likewise operated by air-cylinders mounted on the motor-truck, immediately over the transmission and clutch cases. By an ingenious regulating valve, mounted, together with the brake-valve, on a pedestal in front of the engine, the friction-clutch is momentarily released as the gears are changed.

The air is supplied by an eccentric pump on the main shaft and by a tandem air-gasoline air-pump, which is placed in front of the engine. This auxiliary air-compressor is 4½ inches by 4½ inches, rated at 8-horsepower, 1,000 revolutions per minute. In an emergency hand-power can replace all the functions of air-power.

The engine is placed transversely

across the truck immediately behind the driving axle, which is in the front. The crank-case, of cast steel thus acts as a transom to the side members of the truck. The cylinders are cast in blocks of threes, and are supported by 16 one-inch stanchions, which are braced. The cam-shafts are carried on both sides of the cylinders, and are driven by a large "idler" gear from the crank-shaft. A worm adjustment for valve setting. The cam-shafts slide so as to reverse the engine and to operate the air-valves as may be required. The timers for magneto and coils are like-wise moved by a helical key.

The cylinder heads are cast separate, and contain the air, inlet, and exhaust valves, which all open downward. These castings are water-jackets, the cylinder proper having copper water-jackets fitted.

The crank-shaft is in halves, joined by means of the 26-teeth $5\frac{1}{4}$ -inch driving sprocket, which drives a 5-inch Morse chain meshing with a 42-teeth sprocket bolted to the "live" element of the large disc-clutch concentric with the driving axle. The clutch is operated through toggles by either air or hand pressure.

The transmission is either direct or through back gears which reduce the speed by a trifle more than one-half.

The engine, at 350 revolutions per minute, is rated at 200 horsepower, but a mile has been accomplished in 50 seconds, with a 32-teeth driving sprocket. There is the choice, during building, of fitting 42-teeth, 35 or 32-teeth, driving sprockets, determined by the grades, loads, and the possibility that trailers be attached.

These cars cost from \$19,000 to \$20,000, according to equipment, and on several short branches of 18 miles or more handled the entire traffic during the day, the heavy freight being hauled during the six hours of the night by steam locomotives.

In addition to these cars there are some Ganz cars running on the Florida East Coast Railway, imported from Budapest, and some General Electric gasoline-electric cars on the Delaware & Hudson Railway. The latter has a chain drive from a 45-kilowatt generator, controlled by a semi-automatic accelerating switch.

It is in the Mid-West, the South-West, in Colorado and California, that this system of handling local traffic on the main lines and taking entire charge of branch lines is most in vogue. Several are being placed in Mexico. The two difficulties that they have to contend with are the supply of fuel and the labor question. In this connection it should be stated that six coupled cars traveled to the Pacific Coast from Oma-

ha and made passenger time. The drivers were all drilled to obey instantly certain signals.

Electric Engines for Pennsy.

Two big engines which the Westinghouse Company at East Pittsburgh have been putting electrical equipment on for the Pennsylvania Railroad were finally completed October 18. The engines will be given a test in the long tunnels about New York City, and should they prove to be a success, orders for 25 will be placed. The engines will be built at the Juniata shops and sent to the Westinghouse shops for the electrical equipment. Twelve men from the Juniata shops finished the construction work on the first two, and returned to Altoona.

THOMPSON'S COAL ROAD.

Getting Connection to Tidewater.

To complete the purchase of two thousand acres of coal land at Jarvisville, Marion county, W. Va., through Charles W. Swisher and others, Josiah V. Thompson, the coal magnate of Uniontown, Pa., spent a part of last week at Clarksburg. It is announced that Mr. Thompson and others will build a railroad from Uniontown up the Monongahela valley through Marion and Harrison counties to a connection with the Kanawha & Michigan Railroad and the Virginia Railroad at Charleston, affording outlets to the great lakes and to the tidewater. More than twenty-one thousand acres of coal lands in Harrison county are held by Mr. Thompson and a larger area in Marion county, which, with other large tracts, will be tapped by the proposed railroad. Work on the road will begin early next spring, according to present announcements.

Work on Hampshire Southern.

Officers of the Hampshire Southern announce that about 700 men are now at work building from Romney, W. Va., southwest to Petersburg, 40 miles, of which about 20 miles are ready for ties and track laying. It is expected to have the entire line in operation by January, 1910. The maximum grade is to be one-half of one per cent, with maximum curvature of six degrees. There will be three bridges. Work is now under way on two of the bridges and material is on the ground. The company does not contemplate building an extension southeast to Harrisonburg, Va., about 50 miles. W. B. Cornwall, president, Fairmont, W. Va.; William Trapnell, chief engineer, Pomeroy.

To Secure Entrance to Norfolk.

According to press reports from Norfolk, Va., a petition will be presented to the Norfolk City Council next month,

for permission to construct a tunnel under the Elizabeth River from Pinner's Point. The plan is to have the Seaboard Air Line, Southern Railway, Atlantic Coast Line and Belt Line railways enter Norfolk direct by means of this tunnel and connect with the present tracks of the Norfolk & Southern extending to Cape Henry, where a large breakwater is to be built and a number of piers constructed. The plans also provide for the construction of a union passenger station in the center of Norfolk's business district, estimated to cost \$1,000,000.

B. & O. Laying Pipe.

Press reports from Baltimore state that three miles of water-mains to cover all wharf, elevator, warehouse and office property of the Baltimore & Ohio Railroad, at Locust Point, are being laid. The system is to be a part of the high-pressure fire protection service, the force of which is to be furnished from a large powerhouse now being built near Pier 8.

Activities in the South.

The Cullman Coal & Coke Company, of Cullman, Ala., has completed organization, has contracted for a 25-mile railway to its mining property, and will provide for a daily output of 3,000 tons of coal; the capital stock is \$2,000,000, and capitalists of Amsterdam, Holland, are largely interested, according to the Manufacturers Record.

The International & Great Northern Railway has awarded contracts for roundhouse, cotton platform, and other terminal improvements at Taylor, Tex., to cost \$100,000.

Two New Charters.

Two charters were issued during the week for new interurban companies. The Titusville Southern Railroad was given permission to build from Titusville to Oil City, 25 miles. The capital of the company is \$250,000. The incorporators are Charles E. Wellborn, Weston, N. J.; President J. L. Strous, New York, and C. B. Miller, H. W. Fry, C. I. Miller, S. H. Miller and Charles H. Hollinger, of Harrisburg. A charter was issued to the Bedford, Fulton & Franklin Electric Railway Company to build a 50-mile line between Bedford and Chambersburg. It has \$300,000 capital.

Fence Post of Solid Pipe.

Although engaged in the practice of law, W. C. Ardery, of Columbus, Ind., has invented a fence post of iron pipe, with various anchors and guys, to make it solid. After two years' test it has been adopted for the Pennsylvania Lines West, and may be for those east of Pittsburgh and Erie.

NO ADVANCE, SAYS McCREA.**President of Pennsylvania Replies to Shippers' Circular.**

Recently a letter, signed by 15 Trades Bodies of the Middle-West, was sent to Presidents Brown, of the New York Central Lines; Murray, of the Baltimore & Ohio, and McCrea, of the Pennsylvania, in which it was stated that C. C. McCain, in a pamphlet entitled, "The Diminished Purchasing Power of Railway Earnings," had brought to the front again the question of a general advance in freight rates, particularly in official classification territory. It was also assumed that Mr. McCain was speaking officially for the railroads of the Trunk Line Association. In reply to this letter, President McCrea, of the Pennsylvania, on October 18 sent an open letter to the following commercial organizations:

Receivers & Shippers Association, of Cincinnati; Lumbermen's Club, Cincinnati; Carriage Makers' Club, Cincinnati; Cincinnati Branch—National Metal Trades' Association; Manufacturers' Club, Cincinnati; Cincinnati Paint Club; Dayton Chamber of Commerce; Columbus Board of Trade; Indianapolis Freight Bureau; Ohio Shippers' Association, Columbus; Traffic Bureau of Toledo; Business Men's Club, Toledo; Toledo Founders' Association, Toledo; Toledo Metal Trades' Association, Toledo; Carriage Builders' National Association.

In his letter, Mr. McCrea, says:

You refer to a pamphlet issued by C. C. McCain and say, "that it is assumed that the carriers, for whom Mr. McCain speaks, do not expect either his premises, or his conclusions deduced therefrom, to pass unchallenged," and you further state that the issue of this pamphlet "brings to the front again the question of a general advance in freight rates, particularly in official classification territory."

In the first place, no question of general advance in freight rates, or in classification, is now under consideration or contemplated by the railroads in the territory in which our lines operate.

In the second place, you are under a misapprehension, as in the pamphlet referred to, Mr. McCain does not speak for the carriers, but solely for himself.

It is true that Mr. McCain is chairman of the Trunk Line Association, but he was also at one time auditor of the Interstate Commerce Commission, and occupied other positions, in all of which he had had an opportunity to give some study to the questions with which he has dealt in his pamphlet, and some of the railroads—our own among the number—have distributed a number of these pamphlets for the same reason that we have distributed other pamphlets of a similar nature without necessarily agreeing with all the facts or deductions dealt with therein, but for the purpose of general education of railroad men as well as the public, in problems affecting the carriers and the public.

The criticisms contained in your letter therefore should properly be addressed to Mr. McCain, and we have forwarded

your letter to him for his consideration and reply, if he desires to do so.

Mr. McCrea, during a visit to Pittsburgh last week, made the following statement as to business prospects:

"The single-track railroads must be double-tracked, a vast amount of equipment must be purchased and other costly improvements must be made to handle the business which is bound to come.

"This means that the railroads must raise a vast amount of money, and everything will go along smoothly, provided the politicians remain quiet until it is determined what effect the recent legislation will have upon business conditions. There has been some talk of a car shortage, but the situation is not serious as far as our road is concerned. I cannot state at this time just what improvements will be made by our company, but it will be necessary for all roads to increase their facilities."

LOCOMOTIVE VALVE GEAR.**Baker-Pilliod Device Explained to New York Railroad Club.**

James Kennedy, vice president of Railway & Locomotive Engineering, spoke before the New York Railroad Club last week, explaining the Baker-Pilliod valve gear as applied to locomotives.

Mr. Kennedy said that the 20th century locomotives have grown to such colossal proportions that the arrangement of the valve gearing outside of the frames has become a primal necessity. The limited space between the frames with the increasing size of axles and eccentrics renders it particularly difficult to adjust and examine the Stephenson, shifting link gear under such conditions, and doubtless this was the chief cause that called the Walschaerts valve gearing into prominent use in American locomotive service. The Walschaerts valve gearing has several advantages over that of the shifting link. It also has its drawbacks, which in these days of rapid construction and hard usage, are not hard to seek.

Perhaps the most successful attempt in the present century in this direction, the speaker said, has been the combination known as the Baker-Pilliod valve gear. The device resembles the Walschaerts gearing in several features. It has the eccentric crank attached to the main crank pin, and a combination lever deriving its motion from the crosshead. With these two factors in the motion the resemblance ceases, the chief variation being the absence of the radial link. As is well known, the movement of a radial link, whether shifting or fixed, is a source of error, in all motions. These errors are caused by the slipping of the link-block and are especially marked in the case of the shifting link as it travels through a longer arc than is usual in

the case of links oscillating upon a fixed center.

If the motion of a sliding valve can be perfectly controlled and the length of stroke varied without the intervention of a radial link, a real gain in the economical use of steam will be made. The best proof of this is shown in the use of the Corliss valve on stationary engines. This kind of valve gearing with its delicate governor and complex mechanism is not suited for the incessant vibrations and distorting strains of locomotive service. The ideal valve gearing for a locomotive must have the element of rigidity in a marked degree, and at the same time possess that flexibility of adaption essential to the various requirements of the service. The best use of steam pressure is possible only when under perfect control.

A "No Leak" Flue Joint.

Charles S. Coleman, of Spokane, for 25 years a boilermaker and locomotive fireman, has secured a patent on what is known as the Coleman never leak flue joint, which, according to the inventor's statements, will revolutionize the locomotive practice of the world. It covers a new flue joint, consisting of a steel point six inches long, which is welded into the boiler, making the flue joint inside of the boiler instead of the present practice of an outside joint, which soon becomes leaky. As to what this promises, Mr. Coleman says:

"Figuring the present cost of keeping up the locomotives due to leaky flues, between \$50,000,000 and \$100,000,000 per annum, or from \$1,000 to \$2,000 a locomotive a year, the invention will mean a saving in the operating expenses of the railroads of more than the dividends paid by all the railroads of the world, namely, \$278,000,000 during 1908."

To Improve Car Couplers.

While by many it may have been supposed that automatic car couplers have been brought to such a stage that men of mechanical mind and genius are little disposed to attempt to further development, is an error. One of the latest productions is a coupler that does away with rubber hose, a steel pipe being used. It provides the setting of emergency brakes when a train breaks in two, and this is its strong feature.

Subway for Buenos Aires.

A bill is pending in the Argentine legislature to authorize the construction of an underground electric railway crossing Buenos Aires from east to west. The idea is to construct a system of underground electric lines working in conjunction with certain tramways already in operation.

TO BUILD SIDE DUMP CAR.

Joliet Company to Erect Plant for New Specialty.

A new car company has been organized, to be known as the Joliet Steel Car Manufacturing Company, with the intention of building a large shop at Joliet, Ill. The president of the company is Robert D. Campbell, general manager of the Elgin, Joliet & Eastern Railway; the first vice president is Victor R. Browning, vice president of the Browning Engineering Company, Cleveland, O. The company will commence operations by making a specialty of the Campbell-Olden steel side dump car.

Both Mr. Campbell and Mr. Olden are connected with the company. In 1900 Robert D. Campbell became interested in the design of steel cars, and he secured the co-operation of W. Q. Olden, an experienced structural engineer, who perfected a design embodying the use of structural shapes with doors arranged to discharge the load at the sides of the car and outside the rails. Of these cars, 3,000 were built, and they have been in continuous service ever since.

The discharge openings in the bottom of the car are very large, having a combined area of 81 square feet. The floor plates are inclined toward the center and form a hopper which directs the entire contents of the car to these openings.

Parcels Tube for New York.

Parcels soon will be shooting through 54-inch tubes, electrically operated, in Manhattan, Brooklyn and Jersey City if the plans of Wall street bankers are carried out. They have decided to put to use the old charter and franchise of the New York Parcel Dispatch Company, and the question as to what extent they may do so and beneath what thoroughfares in Manhattan and Brooklyn they may operate them will come up before the Public Service Commission. The plan carries with it tubes of the same size beneath the North River to the railroad terminals on the New Jersey side, and beneath the East River to tap

shipping centers in Brooklyn. The fact that the tube of the Parcell Dispatch Company will be only 54 inches in diameter, if built, will make it useless in handling big freight and remove it, entirely from participation in the city's passenger traffic. L. B. Stillwell, representing the banking interests, will appear before the city commission in a short time and outline the plans.

The original plan was to have the tubes arranged beneath the sidewalks so that any one might drop parcels into them through boxes, much like large letter boxes. The charter does not permit the company to place its tubes where they will interfere with any proposed rapid transit railway line. Louis C. Krauthoff is the New York counsel for the Chicago Company, and Charles F. Mathewson, one of his partners, is counsel for the Consolidated Gas Company.

Westinghouse Exhibit at Denver.

The Westinghouse exhibit at the street railway convention, at Denver, occupied a space of approximately 2,500 square feet. The companies represented by their displays were the Westinghouse Electric & Manufacturing Company, the Westinghouse Traction Brake Company, the Westinghouse Machine Company, and the R. D. Nuttall Company. The exhibit of the Electric company consisted of railway motors, a complete exhibit of material showing the control of cars and trains by electrical machinery and a line of motors for machine tools. The Machine company showed a complete electric train-lighting plant, consisting of a 40-horsepower generator and a steam turbine; also two LeBlanc condensers and other auxiliary apparatus. The Traction Brake company showed a complete set of machinery for stopping one car, two cars, three cars, or a train of electric cars, by the air-brake system; also auxiliary apparatus. The R. D. Nuttall Company displayed a complete set of trolley machinery, harps, trolleys, gears and pinions. The Electric company also exhibited, outside of the auditorium, a single-phase car, which will later be in operation on the Denver & Interurban.

CLOSE UP TROLLEY GAPS.

New Interurban Projects Proposed in Pennsylvania.

Business men of Franklin, Grove City, Slippery Rock and Butler, Pa., are promoting an electric line to connect Franklin with the Pittsburgh & Butler and the Pittsburgh, Harmony, Butler & New Castle trolley lines. The route suggested by the business men of Franklin and Grove City, with Ellwood City as the southern point, has been surveyed and it is claimed the engineers were in the employ of the Vanderbilt interests. This has led to the report that the Pittsburgh & Lake Erie Railroad was about to construct a cut-off from Ellwood City Junction to Franklin, to connect with the Franklin & Clearfield road for Pittsburgh-Buffalo passenger traffic.

The projectors have secured a charter under the name of the Slippery Rock & Grove City Street Railway Company, with \$55,000 capital, to build a nine-mile line between Grove City and Slippery Rock. Captain John P. Barr, of Grove City, is president. The other incorporators are: W. Henry Wilson, J. A. Jolliffe, S. L. McClure, J. H. Pizer, Slippery Rock, and C. S. Schrubbs, J. M. Martin, John Carruthers and William Graham, Grove City.

Rights of Way in Ohio.

Press reports from Aberdeen, O., state that the Pittsburgh, Pomeroy, Portsmouth & Cincinnati Electric Railway Company has made application to council for right of way through Aberdeen.

The company, which is backed by Pittsburgh and Cincinnati capitalists, has already obtained the right of way through the various counties and towns along the north bank of the Ohio River to the Brown county line. Agents are now obtaining the consent of property owners through Clermont and Hamilton counties.

The promoters promise to have the road in operation between Pittsburgh and Cincinnati within three years.

Try a Want or For Sale Ad in the Industrial World.

Corporations to Which Charters Have Been Granted Recently

PENNSYLVANIA.

Piper and Fullerton Company, \$10,000. Treasurer: Wm. W. Piper, Beaver Falls, Pa. Directors: Scott W. Fullerton, John W. Craven, Wm. W. Piper, all of Beaver Falls, Pa.

Royersford Interurban Street Railway Company, \$25,000. President: Joseph Addison Buckwalter, Royersford, Pa. Directors: Joseph Addison Buckwalter, R. Samana Raiser, Royersford, Pa.; Arch

B. Eddowes, Wm. W. Levering, Wm. H. Houston, all of Philadelphia.

Acme Graphite Manufacturing Company, \$5,000. Treasurer: Geo. H. Hooper, Uwchland, Pa. Directors: Geo. H. Hooper, Uwchland, Pa.; Jacob Liffman, Philadelphia, Pa.; Chas. E. Baer, New York, N. Y.

Standard Chemical Company, \$5,000. Treasurer: Alexander Black, 408 Graham street, Pittsburgh. Directors: Allen T.

C. Gordon, Alexander Black, Wm. K. Johnson, all of Pittsburgh.

Hanover and Warrior Run Street Railway Company, \$100,000. President: James R. Scouton, Wilkes Barre, Pa. Directors: Louis F. Camp, Tunkhannock, Pa.; Robt. J. Blair, Luzerne, Pa.; James R. Scouton, Harry H. Davenport, Morgan T. Rees, all of Wilkes Barre, Pa.

Centre County Traction Co., \$100,000. President: W. C. Hagan, Pitts-

burgh. Directors: W. C. Hagan, Wm. M. Furey, Pittsburgh, Pa.; L. T. Munson, J. C. Meyer, Robt. F. Hunter, all of Bellefonte, Pa.

The Slippery Rock & Grove City Street Railway Company, \$55,000. President: Capt. John P. Barr, Grove City, Pa. Directors: W. Henry Wilson, Jas. A. Jolliffe, S. L. McClure, J. H. Pizor, C. S. Shrubbs, all of Slippery Rock, Pa.; J. M. Martin, John Carruthers, W. M. Graham, John P. Barr, all of Grove City, Pa.

Titusville Southern Railroad Company. \$250,000. President: Charles E. Wellborn, Weston, N. J. Directors: Charles E. Wellborn, Weston, N. J.; Jesse L. Straus, New York, N. Y.; C. B. Miller, Charles H. Hollinger, H. S. Miller, C. L. Miller, Harrisburg, Pa.; Howard W. Fry, Lancaster, Pa.

Bedford, Fulton & Franklin Street Railway Company. \$300,000. President: M. J. Murphy, Pittsburgh. Directors: H. D. Tate, Bedford, Pa.; M. H. Sheats, McConnellsburg, Pa.; J. Y. Daly, George W. Rook, John F. Fay, Pittsburgh, Pa.

Cyclops Foundry Company. Increased capital stock from \$5,000 to \$100,000.

Campbell Horse Shoe Company. Increased capital stock from \$5,000 to \$200,000.

NEW YORK.

High Grade Metal Company, Brooklyn; manufacturing castings of every metal; \$50,000. William C. Milner, Bertha O. Duck, Blanche E. Phillips, 392 Greenpoint avenue, Brooklyn.

Erfindung Manufacturing Company, Rochester, N. Y.; manufacturing mail catchers, devices and machinery; \$200,000. Edson Potter, George R. Kelly, Charles Daniels, Rochester, N. Y.

Buffalo-Molyneux Company, Buffalo; manufacturing molyneux mailing machines and devices for handling mail matter; \$200,000. Barton S. Molyneux, Christopher H. Bierbaum, Luther Hatch, Buffalo, N. Y.

Ramblers Automatic Company, of New York, manufacturing motors, engines, machines, machinery, wagons, boats, cars, etc.; \$25,000. Thomas H. Beardsley, George Tierman, Frank H. Purcells, 54 Wall street, New York.

The Jay Street Connecting Railroad, Brooklyn; \$10,000. John Arbuckle, W. A. Jamison, W. G. Gilmore, 71 Water street, New York.

Krefeld Steel Company, Manhattan; traffic in iron, steel and other metals; coal, coke, lumber, etc.; \$50,000. Millard Davis, 367 West Twentieth street; Carl Ehlermann, Jr., 9 East Thirty-second street; John H. Hooers, 552 West One Hundred and Sixty-third street, New York.

Dilworth, Towne & Lockwood, White Plains, N. Y.; deal in steel and iron tools, hardware, machinery, etc.; \$100,000. Timothy A. O'Leary, Jason G. Lamson, Michael J. O'Leary, 2 Rector street, New York.

F. & S. Bachner, manufacturing and deal in tin, zinc, lead, hardware and hardware supplies; \$2,000. Samuel, Fannie and Antoinette Bachner, Flushing, L. I.

Multi Speed Shutter Company, of New York; Kingston, N. Y.; manufacturing cameras, lenses, shutters and everything relating to photography; \$175,000. Walter B. Matteson, 370 Adelphi street,

Brooklyn; William L. Edwards, Riverside, Conn.; Alexander Nagy, 234 East One Hundred and Twenty-first street, New York.

OHIO.

Dayton Steel Foundry Company, Dayton; George Walther, Jacob Walther, J. B. Nordbolt, Gustav Weihrauch, J. A. Wortman; \$50,000.

Cleveland Vibrator & Electrical Company, Cleveland; W. R. Brown, V. G. Murphy, N. A. Quilling, W. H. McJury, B. A. Scott; \$8,000.

Rummel Machine Screw Company, Cleveland; Richard E. Rummel, Henry C. Leeseberg, H. T. Rummel, Elsie T. Rumel, Lizzie M. Leeseberg; \$20,000.

Foster Electric Company, Cleveland; John B. Foster, Joseph W. Mattingly, T. C. Mattingly, R. N. Foster, G. P. Faerber; \$10,000.

Bahmann Iron Works Company, Cincinnati. Edward J. Harth, Robert F. Bahmann, William Bahmann, F. Lawson Moores, B. W. Bahmann, Jefferson Livingston, W. W. Cooney and Fred Holz; \$100,000.

Automatic Mine Door Manufacturing Company, Columbus. K. B. McCleary, B. O. Byers, Samuel A. Monahan, Boyd J. Travis and E. McCormick; \$50,000.

Beach City Silica Sand Company, Beach City. J. F. Parks, L. D. Schott, W. H. Slaughter, B. C. Senter and U. G. Rolston; \$25,000.

Sebastian Lathe Company, Benjamin; C. E. Sebastian, Jacob May, M. M. May, F. E. Webner; \$100,000.

Olds-Oakland Motor Company, Cincinnati. W. G. Weldon, L. M. Schulte, Alfred C. Cassatt, W. C. Rippey, George Stugard; \$10,000.

American Farm Machinery Company, Springfield; Read L. Bell, C. M. Root, B. F. Howell, W. N. Whitely, W. N. Whitely, Jr.; \$50,000.

Part Regrinding Globe Valve Company, Cleveland; increase of capital from \$10,000 to \$20,000.

United States Malleable Iron Company, Toledo, increase of capital from \$100,000 to \$150,000.

Grant-Lees Machine Company, Cleveland, increase of capital from \$100,000 to \$150,000.

Fremont Power & Light Company, Fremont; increase of capital from \$350,000 to \$750,000.

Fostoria & Fremont Railway Company, Fostoria; increase of capital from \$10,000 to \$300,000.

WEST VIRGINIA.

Norfolk Brick & Tile Company, of Charleston, chief works in Norfolk; \$50,000. Delmar Lincoln, John D. Lewis, W. E. Moore, J. F. Hudson and C. M. Alderson, of Charleston.

Halstead Brake Release Company, to deal in patents, etc., for manufacture of brakes and releases; headquarters in Charleston; \$50,000. A. D. Harrah and others of Charleston.

Empire Glass Company, of Smethport, Pa.; capital \$200,000. Thomas Camp and others, of Smethport.

Birch Beaver Coal Company, of Grantsville, W. Va.; \$100,000. S. M. McConnaughey, of Parkersburg; W. C. McConnaughey, of Parkersburg; T. E. Graham, of Parkersburg, and A. E. Kenney, of Grantsville.

Spruce Coal Company, of Beckley,

\$25,000. T. E. Bibb, B. Carter, G. C. Hedrick, W. H. Rader, of Beckley, and W. G. Caperton, of Slab Fork.

INDIANA.

G. M. Diehl Machine Works, Peru; \$30,000; to manufacture metal machinery. Directors: Charles Latchene, G. M. Diehl and August Diehl.

South Side Elevator Company, Vincennes; \$10,000. Grain dealers. W. H. Vollmer, C. C. Winkler, L. H. Vollmer, J. L. Baker and J. J. Murphy.

Domestic Producer Gas Company, Bloomington; \$10,000. Directors: Sherman Davis, J. W. O'Harrow and G. B. Moxley.

John Cobb Chair Company, Shelbyville; \$6,000; manufacturers; T. J. Cobb, C. L. Davis, Enos Porter, A. E. Spiegel and C. A. Spiegel.

Oswald Motor Company, Goshen; notice of increase of capital stock from \$30,000 to \$40,000; J. E. Newell, president.

MAINE.

Ambursen Company, South Berwick, mechanical and electrical works; \$200,000; W. Thompson, F. A. Hobbs, both of South Berwick.

American Power & Light Company, Augusta; machinery for manufacturing of light, heat and power; \$15,000,000. E. M. Leavitt, J. Williamson, both of Augusta.

Christianson Machine & Casting Company, Augusta; hardware specialties; \$10,000, both of Augusta.

Henry Thermo-Electric Company, Portland; electric instruments; \$100,000; J. H. M. Parker, Lenoxville, president; C. W. Cate, Sherbrooke, treasurer; F. V. Chase, Portland, clerk.

National Sanitary Ventilator Company, Kittery; sanitary ventilating; \$50,000; A. J. Cheney, Beverly, Mass., president and treasurer; H. Mitchell, Kittery, clerk.

Continuous Process Coke Company, Augusta; stock; \$1,000,000; E. M. Leavitt, Winthrop; L. A. Burleigh, Augusta.

Armstrong Bolt & Lock-Nut Company, Portland; tools and instruments of iron; \$1,000,000; C. E. Eaton, T. L. Croteau, J. E. Manter, Portland.

Anticor Manufacturing Company, of Maine, Portland; machinery, tools and appliances; \$1,000,000. C. E. Eaton, T. L. Croteau, J. E. Manter, Portland.

Preston Spinning Ring Holder Company, Portland; machinery and tools of all kinds; \$100,000. H. L. Cram, E. T. Fenley, H. L. Cram, Portland.

Steam Motor Company, Portland; machinery of all kinds; \$1,000,000; T. L. Croteau, president; A. F. Jones, treasurer; J. E. Manter, clerk, all of Portland.

NEW JERSEY.

Vanadium Metals Company, Camden, N. J.; iron, steel, brass, bronze, copper, lead, tin, etc.; \$300,000; V. A. Murray, H. G. Elliott, K. V. Myler, Camden, N. J.

The Bonna Pipe Company, Trenton; contracts, bridges, roads, highways, etc., contracting, etc.; \$100,000. John D. O'Brien, London, England; Ellis L. Pierson, Harry R. Wilson, Trenton.

Baker Machine Company, Trenton; machinists, etc.; \$50,000. William H. Baker, Israel Bates, J. Lefferts Conard, Charles M. Gedney, Trenton.

Wanted, For Sale, Bargains, Etc., in Brief.

POSITIONS WANTED.

Situation—Young man familiar with rolling cost work, timekeeping, shipping, storekeeping, etc., at present employed, open to position November 1; best of reference given. Address S., 905 Arrott Building, Pittsburgh, Pa.

Wanted—Situation in Open Hearth Department. Superintendent or Foreman. A man with successful experience and ability to produce best results, is open for engagement. Has thorough practical knowledge. For further particulars, address John Givens, P. O. Box 1386, Pittsburgh, Pa.

Foundry Foremen and Others wanted to increase their earning capacity 25 to 50 per cent, by taking a course in the mixing of irons with the Milwaukee Correspondence Schools, Goldsmith Bldg., Milwaukee, Wis.

A Position as Manager or Superintendent; age 29; a graduate Massachusetts Institute of Technology; at present in charge of a boiler plant with an annual output of nearly 100,000,000 K. W. H.; reasons for desiring a change; 12 hours per day, 365 per year. Address Box 4, Darlington, Mo.

WANTED.

Situation—An experienced accountant, correspondent and general office man, accustomed to handling men and accounts, desires position where energy and attention to details will merit recognition. Address Postoffice Box 194, Northside, Pittsburgh.

Wanted—Attention, manufacturers. An old-established rolling mill, whose output is high grade bar iron, and black and galvanized sheets, and having ample ground in Pittsburgh district, would be interested in having located on their ground manufacturing adjuncts that use above materials. Parties engaged in manufacture of trade articles from above materials, who contemplate change of location, or engaging in new enterprises, can address office of the Industrial World, Pittsburgh, Pa., giving full particulars as to tonnage used; space desired, etc.

Wanted — Master Mechanic; responsible, live man, experienced in the manufacture of high-grade machinery and large construction works, mills, smelters, etc., in the States, Canada and South America. Address B. Nilius, 33 St. Johns, Ore.

Wanted — Foundry foreman, for chilled and sand rolls, loam and heavy floor work. Answer, stating age, experience, salary wanted, and full particulars. Address Box 220, care Industrial World.

Wanted — A second-hand 15 or 16 h. p. stationary gas engine. Address Norwood Machine Company, Cincinnati, O.

Wanted — Manufacturers wanted to build cold rolled shafting machinery on

royalty basis, under United States patent No. 895,364, dated August 4, 1908, described in the Industrial World December 28, 1908. Address John S. Griffin, Roslyn, Washington.

SEALED PROPOSALS.

Machines for Tabulating Agricultural Statistics. — The Director of the Census is considering various types of machines with a view to determining the one best adapted for tabulating the agricultural statistics of the Thirteenth Census. Any one possessing a machine adapted for this purpose is invited to present the same for test in practical operation at the Bureau of the Census, Washington, D. C., on or before July 31, 1909. For further information address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

Sealed Proposals will be received at the office of the Director of the Census, Washington, D. C., until 2 o'clock p. m., August 9, 1909, and then publicly opened, for furnishing all the labor, materials, and work necessary for the construction in lots of 60, 75, 100, or 125 tabulating machines and delivering the same complete, free of all charges for transportation, at the Census Building, Washington, D. C. right is reserved to accept or reject all bids in whole or part, to strike out any item or items in the specifications, and to waive any defects. For specifications, blueprint drawings, blank proposals, and full information, address E. Dana Durand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

FACTORIES WANTED.

Factories Wanted — Grafton, W. Va., will give to manufacturers, a free site on railroad siding, with shipping facilities in all directions, five-cent gas, and an inexhaustible supply of soft water and coal. For information, address Secretary, Grafton Board of Trade.

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Horizontal Blowing Engine, long cross-head type. Floor space 7 feet 6 inches by 24 feet. Two balance wheels, 10 feet 1 inch in diameter. Six arms, sec. of rim 8½ inches by 9½ inches. Each wheel cast whole. Bed piece heavy box type, cast in two pieces, joint made with bolts and heavy shrink links. Steam cylinder, diameter 24 inches, stroke 42 inches, balance slide-valve. Porter-Allen type, diameter steam pipe six inches, exhaust 7 inches, diameter of piston rod 3¾ inches. Air cylinder, diameter 48 inches, stroke 42 inches, discharge pipe, 14 inches, diameter of piston rod 4 inches, diameter of crank shaft 9½ inches. This engine has been little used and is in good order and condition. Apply to Tremont Nail Company, West Wareham, Mass.

For Sale—Steam engine. Wetherill Corliss, R. H., 22x48, 250 H. P., first-class condition, cost \$3,300, will sell for less than half price, a bargain. Keppel & Company, Chester, Pa.

For Sale — One second-hand 8x9" Chuse engine, direct connected to 15 k. w. Triumph generator; good condition. Electric Machinery & Specialty Company, 204 Franklin avenue, St. Louis, Mo.

For Sale—Rock Drill—Ingersoll make; motor, 1 h. p., complete; shafting, pulleys, hangers, belting, lathes, 1 drill press, cheap; boilers, engines, pumps. William H. Flynn Machinery Company, 404 East Second street, Cincinnati, O.

Machinery Bought, Sold and Repaired

—Engines and boilers, all styles and sizes, both new and second-hand; machinery of every description for all purposes; also pulverizer and crushers. Write to me for anything you want. Gruendler Machine Company, 928 Main street, St. Louis, Mo.

For Sale—One 18x24" slide valve engine 2 66"x18" tubular boilers, 1 heater, 1 deep-well pump and 5 wood working machines; will overhaul and put in first-class condition, cheap; also, several direct current motors, 3, 5, 10 and 15 h. p., 220 volts. The Farrin-Korn Lumber Company, Winton Place Station, Cincinnati, O.

IRON ORE LANDS.

For Sale—10,000 acres in tracts, fine ore lands in Virginia and Tennessee. Fine location for transportation. Abundant limestone, water, coking coal, nearby and on the properties. Low price. For particulars write, in care Box 210, Industrial World.

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NEW FOREIGN INVENTIONS.

Australian Rail-Planer.

Advices from Sydney, Australia, give the details of an Australian invention for planing street car and other rails, without disturbing the permanent way, which has just been accepted by certain street railroad companies in that country as well as by the railroad authorities in at least one of the States.

The invention is known as the Woods-Gilbert rail planer. It is a self-contained machine and travels on the rails so that it can be worked at night without interfering with the traffic. The claim of the inventors is that by restoring a rail to its original level and evenness of surface, the cost of putting down a new rail is postponed for many years, and the inconvenience that follows the tearing up of the track is obviated. It is estimated that it would cost about \$7,500 per mile to relay a mile of a street car track, and, as only a small proportion of that cost is involved in the remodeling, it is clear that by restoring the rail to its original shape and efficiency a great saving of capital outlay will be insured. In the case of the street-car rails, the inventors are under a contract to deepen the cut in the rail in which the flange runs; also to reduce the narrow outside lip to the level of the rest of the rail. This work will be done by a high-speed steel cutter, driven from the machine, in one operation, as it moves forward on the line. The great difficulty that had to be overcome was to insure accuracy of cut with a moving machine on an uneven track. This has been secured by the adoption of self-adjusting machinery.

Building Locomotives in Chile.

Consul Alfred A. Winslow reports to the Bureau of Manufactures at Washington, that work was begun August 31 on the first railway locomotive ever built in Chile, at the works of the Sociedad de Maestranzas y Galvanizacion in Valparaiso, concerning which he says:

This is the first of an order for five locomotives to be built by this company for the Chilean government railways. A duplicate order has been placed with Balfour, Lyon & Company, on which work is to be begun soon. It is understood these locomotives are to cost the Chilean government at least 20 per cent more than it would cost to import similar locomotives, but it is in line with a policy to encourage the industrial development of the country. It is the beginning of a new era for Chile. It is understood these orders are to be followed by orders for freight cars, etc., until all rolling stock for the government railways is built at home. The construction of these locomotives is to be under the supervi-

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1—13" x 16" Vertical Steam Engine.
1—16" x 18" " " "
1—12" x 15 Horizontal " " "
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1—14 x 15 " " "
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1—50 ton 6 Wheel Saddle Tank Switching Locomotive
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PATENTS

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ion of an expert government engineer, who spent several months during the past year in the United States studying locomotive car construction.

Brazil to Aid Iron Industry.

Consul-General Anderson writes the Bureau of Manufactures at Washington, from Rio de Janeiro that there is an apparent opportunity for the profitable investment of American capital through the Brazilian government's efforts to establish an iron-working industry. Soon after taking charge of the Government of Brazil as a result of the death of former President Penna, President Peçanha announced that it would be one of the policies of his government to secure the establishing of iron industries in Brazil, both for the purpose of taking advantage of the immense deposits of iron ore known to exist in various parts of the country and also to stimulate the industrial development of the country in those lines which depend upon iron working as a base. In line with this announced policy, on July 8 he sent to the Brazilian congress a message in which he outlined his plans and desires and asked of the congress authority to give to a company or companies formed for the purpose of working in iron upon a proper scale such government aids as might be necessary to secure such investment of capital. A translation of this message is forwarded (and may be consulted at the Bureau of Manufactures). The matter has been considered in Congress, and a bill known to embody the views of the administration is being passed as rapidly as the desire to express views on the subject permits, a copy of the law in its present and probable final form also being forwarded. In line with the legislation, indeed in anticipation of it, the president has appointed Gen. F. de Sousa Aguiar, just retiring from the office of prefect of the federal district, as a commissioner to go abroad for the purpose of securing the investment of capital desired in a great iron-working plant. General Aguiar was the chief personality in the Brazilian commission to the World's Columbian Exposition in Chicago and the Louisiana Purchase Exposition in St. Louis.

To Display Goods in Germany.

J. Pierpont Morgan, honorary president of the committee, which is working for the success of the American Exposition, to be held in Berlin during May, June and July of next year, has called numerous meetings of the American committees in New York the past two weeks to boom the enterprise. Prominent men on both sides of the Atlantic have obtained the Exposition Palace, in the most frequented section of Berlin,

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for the purpose of enabling American manufacturers to exhibit their products in Germany and incidentally to increase their foreign sales and improve the commercial relations between the German and American nations.

The Department of Commerce and Labor, in a special circular on September 4, said: "The conditions governing the exposition have been examined by the bureau of manufactures and appear to offer a great opportunity to American enterprise."

"It becomes a matter of national interest," Secretary Nagle adds, "to have the exhibits thoroughly comprehensive and of exceptional merit."

The Hamburg-American and North German Lloyd lines have granted a 20 per cent reduction in freight charges on exhibits and all exhibits will be admitted into Germany free of customs duty. Indications point to a generous response on the part of American manufacturers. Men such as Thomas A. Edison, John Wanamaker, Louis C. Tiffany, Lee, Higginson & Company, Frank D. Lanne, president of the National Board of Trade of Philadelphia; Henry M. Whitney, J. Pierpont Morgan, Hanford Crawford, president of the St. Louis Commercial Club; Elbert H. Gary, chairman of the United States Steel Corporation; J. Edward Simmons, president of the New York Chamber of Commerce; Bernard J. Rothwell, president of the Boston Chamber of Commerce; Edwin J. Scharff, president of the St. Louis Merchants' Exchange; William Barbour, New York, and several other leading citizens have addressed an open invitation to the country's manufacturers to send exhibits to Berlin.

GAS PRODUCER TESTS.

Report by the Geological Survey.

As a part of its investigation of methods for increasing the efficiency of fuel resources, the United States Geological Survey is studying the general problems involved in the economic use of fuels in gas producers. Among many incidental problems of prime importance that have arisen in the course of this study are those of determining, under practically constant conditions, the duration of gas-producer tests necessary to reduce the possible error to a minimum, and of determining the differences of temperature in the fuel bed of the gas-producer and the influence of such differences on the chemical reactions taking place within the producer.

In attempts to improve the gas producer considerable attention has been given by manufacturers to such problems as those of fixing or isolating the combustible components of the tar, utilizing the waste heat of the producer for the generation of the steam required by the



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plant, and applying the suction principle to bituminous coal and other tarry fuels. Little study, apparently, has been given to the physical and chemical conditions most suitable to the formation of hydrogen and of carbon monoxide, with a view to regulating the percentages of these gases in generators using fuels other than anthracite coal or charcoal.

Reports on the two problems first stated are given in Survey Bulletin 393, which can be obtained free of charge by applying to the Director of the Survey at Washington.

The bulletin consists of two papers, one, by R. H. Fernald and C. D. Smith, on the factors affecting the proper length of tests, the other, by J. K. Clement and H. A. Grine, on temperature differences in the fuel bed.

Messrs. Fernald and Smith, summarizing the results of their experiments, state—

"That throughout a test the fuel bed should be maintained in uniform condition, with regard to both the character of the fire and the thickness of the bed.

"That failing in this, special care should be exercised to see that the fuel bed is in the same condition and of the same thickness at the close of a complete test, or end of a test period, as at the beginning.

"That a test should never be started when the producer has been standing idle for some time with 'banked fires,' as the fuel bed will not be in the average condition under which it will be required to work during the test.

"That if, as the appointed hour for closing the test approaches, the fuel bed is not in the proper condition, the time of closing the test should be postponed until the bed naturally assumes the proper thickness and character. No forcing of conditions should be allowed simply to bring the test to an end at a previously determined hour."

Messrs. Clement and Grine report that—

"Temperature observations were made and gas samples taken in different parts of the fuel bed of the gas producers. The temperature was found to be highest at the bottom of the fuel bed and to decrease from this point to the top of the bed.

"The temperature of the inner region of the fuel bed was found to be 300 degrees or 400 degrees lower than that of the outer layers. A corresponding inferiority in the quality of the gas in the center of the producer could not be established; probably on account of the defective method of sampling.

"It has been suggested that by an improvement in the method of admitting the draft to the fuel bed a more uniform distribution of temperature, and consequently a gain in the capacity of the

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producer and in the quality of the gas, might be obtained.

"Reference has been made to recent experiments by one of the authors which have established 1,300 degrees, Centigrade, as the lower limit of temperature for the formation of a gas rich in CO."

PEAT AS FUEL.

Geological Survey Studies Deposits.

Experiments with bog peat by experts of the United States Geological Survey, are expected to produce from the marshes of the United States a new fuel to take the place of the rapidly disappearing coal supply.

Peat is utilized in Europe for developing light, heat and power, but no serious attempt has even been made in this country to take advantage of the vast deposits that dot the country. These deposits, on a basis of \$3 a ton, are estimated to have a valuation of more than \$38,000,000,000—a greater sum than is represented by all the property, stock implements and buildings owned by the farmers of the United States.

The government has been aroused by the wasteful manner in which the coal of the country has been used, and a thorough investigation is being made to discover other means of developing power. The Department of the Interior only a few days ago announced the withdrawal from entry of several hundred thousand acres of public land to conserve the water power.

The experiments with peat have led to the discovery that the bogs are generally situated far from the coal fields. The States containing the greatest deposits are the Eastern Dakotas, Minnesota, Wisconsin, Michigan, Indiana, Ohio, New York, the New England States, New Jersey, portions of Virginia, North and South Carolina, Georgia and Florida.

"Sweden is dotted with peat deposits, and its bogs are extensively utilized for power purposes," says Professor Fernald, who is quoted in "The Chicago Record-Herald." "In the last eight years new bogs have been constantly added to the list, until bogs producing from 2,000 to 5,000 tons of dry peat for power purposes a year are found on every hand.

"The consulting engineers who have installed some of these plants are unquestionably working in the right direction, placing the power plant directly in the peat bog and transmitting the electric current to the surrounding towns."

Professor Davis believes the development of the industry should be accompanied by great caution.

"The operation of a gas engine at the experiment plant on peat in one or two tests has shown that this fuel is only slightly inferior to many grades of soft coal now on the market and superior to



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some in the quantity of power gas produced," he says. "I believe the day is coming soon when cities located near the peat bogs and away from the coal fields will obtain their power and light from peat. I understand that Florida is to have a power plant soon that will use peat as fuel and will transmit the electricity to Jacksonville.

"The by-products of great value include coke, illuminating oils, lubricating oils, paraffin wax, phenol, asphalt, wood alcohol, acetic acid, ammonium sulphate and combustible gases of good fuel value. If used for fuel gas there is enough nitrogen stored in the peat resources of the country to supply 644,000,000 tons, with a value of \$36,000,000,000, in addition to the gas. Peat is capable of furnishing potential substitutes for wood in various departments of industry, and may relieve to a considerable extent the drain upon the vanishing forests."

OHIO RIVER SHIP CANAL.

Agitation Reopened at Ohio Valley Improvement Convention.

The agitation for the building of the Lake Erie and Ohio river ship canal was re-opened on October 14, at Cincinnati, at the annual convention of the Ohio Valley Improvement Association. John E. Shaw, of Pittsburgh, president of the Lake Erie and Ohio River Ship Canal Company, in a speech before the convention declared:

"To connect the Mississippi and Hudson rivers by a ship canal would be a greater accomplishment than the completion of the Panama canal." Mr. Shaw first arraigned Speaker Cannon for his opposition to the improvement in the Ohio.

"Speaker Cannon is opposed to this improvement because he says he thinks it 'too expensive and impractical.' I am sorry so great a leader in the United States had this to say. I think he said it both unknowingly and unthinkingly." Continuing, he said:

"The Lake Erie & Ohio River Ship Canal Company, which I represent, has obtained charters from Ohio and Pennsylvania, and also from the national government, proving for the approval of the secretary of war of its plans, and the interstate commerce commission of its toll. The cost of the canal will be \$53,000,000 for the 14-foot channel.

"The surveys and estimates were completed in August, 1907, and we hope to finance it under the present business prosperity. The canal can be built in three years.

"The entire country is becoming awake to the fact that railway development almost has reached its limit and ability to meet the growing demands for the movement of our commerce. The frequently recurring congestion is a warn-

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ing, and the remedy lies in making our great rivers navigable and connecting them with waterways by canals wherever possible.

"At last a ground swell is coming up from the people to congress, demanding a bond issue of \$500,000,000 to make the natural waterways systems of our country available for commerce.

"The first step toward perfecting an internal waterway system that will be most effective is to connect the Mississippi and Hudson rivers by a continuous navigable channel. All that is necessary to accomplish this is to connect the Ohio river with Lake Erie by the Lake Erie and Ohio river ship canal and the improvement of the Ohio river ship canal and the improvement of the Ohio river to nine feet. This route should be made available at the earliest possible moment.

"The Pittsburgh district, which I represent, has an annual railway tonnage, not including freight in transit, of 146,798,351 tons; harbor tonnage, 14,395,816 tons; and we move by rail between the upper Ohio river and Lake Erie, directly along the canal route, more than 60,000,000 tons annually.

"There is probably an annual tonnage moved in the Ohio valley from Pittsburgh to Cairo of over 200,000,000 tons. If the river and canal together should carry 50,000,000 tons annually and save an average of 25 cents per ton in its transportation, the saving would be \$12,500,000 annually, or over 10 per cent on the estimated cost of the nine-foot channel in the Ohio river."

During the concluding session of the convention, Albert Bettinger, of Cincinnati, of the Ohio Valley Improvement Association, outlined the object of the organization, in urging the slackwater improvement of the Ohio. In closing, he said, referring to the Ohio river work:

"The all-important question is whether in a work of this magnitude, which already represents an investment of \$10,000,000, the government shall proceed at its present rate of progress, which will require 50 years for its completion, or whether the means should be provided, by bond issue, if necessary, with which the completion can be compassed in a period of 10 years. The simplest business consideration demand the latter course.

"President Taft on several public occasions expressed the opinion that projects like the Ohio river improvement should be provided for in a bond issue. That is the economical, the business view. The statement that by so doing we would be mortgaging posterity is a well sounding catch phrase but does not sound in reason. These improvements are for all time, and rather by their neglect than by their completion would we be lacking in our duty to posterity.

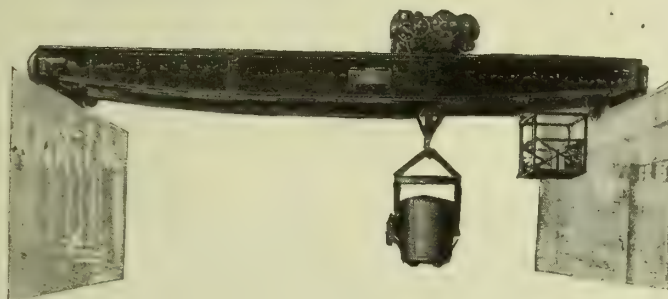


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"There is no posterity in the sense that the burdens of government are cast by one generation upon another. These burdens are continuous, in the discharge of which each generation must and does its part. Washington declared in a letter to a friend in 1783, in speaking of the waterways which a kind providence had bestowed upon us that 'he wished to God we had the wisdom to improve them.' A century and a quarter have passed since the father of his country whose statesmanship was born of the purest patriotism, uttered that fervent prayer, and yet we have barely begun the task. Just and severe will be the indictment which posterity will find against us, if we longer delay the performance of a plain duty."

The convention adopted resolution appealing to the congress to vote a bond issue or otherwise make immediate provision of funds. After reciting that a special board of United States engineers authorized by congress had recommended the improvement for a nine foot stage from Pittsburgh to Cairo, the resolutions declared:

"That in the name of the people of the Ohio Valley, this association solemnly protests that the dilatory policy at present employed in the prosecution of the Ohio river improvement is wasteful and unbusiness like."

The total cost of the improvement is estimated at \$65,000,000. The convention adjourned to meet in Pittsburgh, in 1910.

Commissioners Study Waterways.

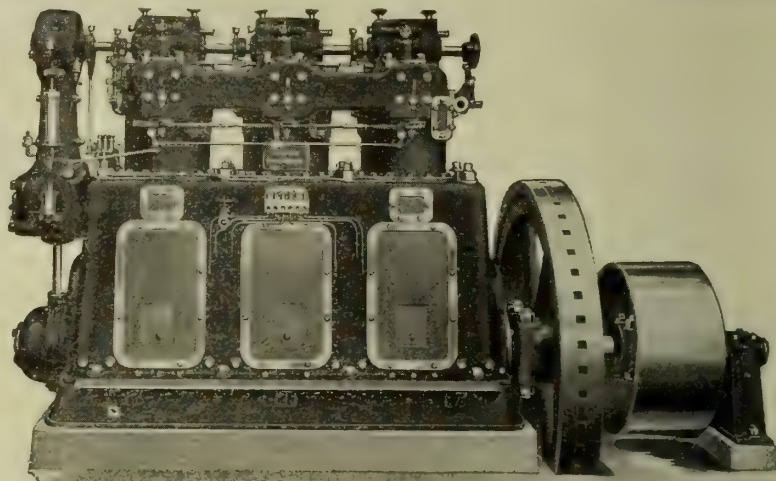
A cable dispatch from London to the New York Tribune says:

The Waterways Commission from America, after protracted labors on the Continent, is making a brief study of data collected by a similar commission at work in the United Kingdom. The restoration and enlargement of canals here have been favored as a resource against the evils of unemployment and as a means of improving domestic trade through cheapening the lines of transport, but it is not likely that the British commission will recommend the revival of disused, shallow canals, although it may advocate the construction of a few deepwater cross-country canals in the industrial north. The American commission has been impressed with the fact that the canals really useful in France, Germany and other Continental countries are shallow waterways, which help out to the government railways in the transport of coal and other bulky merchandise in the densely populated industrial districts. European experience will not warrant the advocacy of deepwater canals for long distance in America at high cost.

The commission has been handsomely entertained by the American Ambassa-

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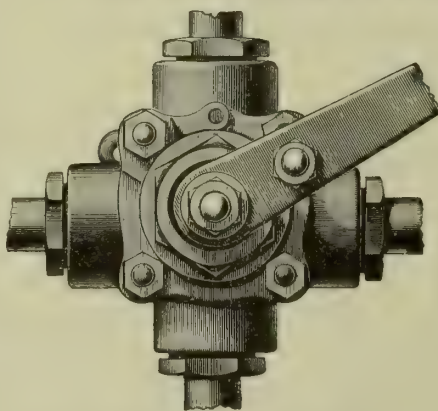


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dor at a dinner at Dorchester House, and by Lewis Harcourt at Westminster. A dozen Senators and Representatives, with their secretaries, will return to America during the next fortnight, Congressman Alexander heading the rear guard.

CHLORIDES AS DUST-SUPPRESSORS.

Everybody connected with the management of mines who has ever attended meetings where mine management was a topic of discussion knows Joseph Virgin, now the highly-efficient superintendent for the Plymouth Coal Company, Plymouth, W. Va. Writing to the "Engineering and Mining Journal," as to experimental trial of the use of chloride of sodium and chloride of calcium, commonly known respectively as common salt and chloride of lime, he says as a result and a summary of his conclusions:

On February 8, 1909, we placed three barrels (one-half ton) of common salt on about 500 feet of heading, the latter being eight feet wide. We distributed the salt like sowing seed broadcast. The dust on the tracks was about three inches deep, and on the debris $\frac{1}{8}$ -inch. All was covered with the salt. We purposely left the dust on the tracks.

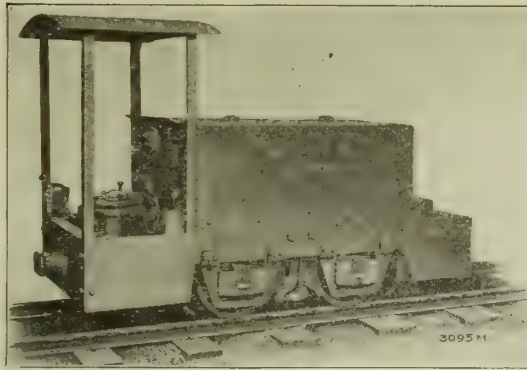
In 24 hours the fine coal was moist, and in two days the dust was quite damp and would stick to the hand like wet gunpowder. The dust remained damp for more than a month. On April 8, 1909, this heading was cleaned up.

About this time we received a ton of calcium chloride. This substance was delivered in three drums of about seven hundredweight each. The chloride, which was in a solid lump, was pulverized to about the size of nut-and-slack coal mixed, and one-half ton was spread over the heading, as was done with the common salt. The calcium began to collect water at once, and the next morning, 12 hours later, the water stood in small pools around the larger pieces; and before the shift was over the dust was well mixed, and the road in places was a little muddy.

The warmer weather coming on, we have had no dust to clean up since, but have cleaned away about 100 tons of debris which fell from the roof and sides and cars. This roadway, however, is still damp, which is due in part to the temperature and the saturation of the summer air.

The common salt was put on in one-half day by one man; the cost, therefore, was \$1 for labor and \$2 for one-half ton of salt, or a total expenditure of \$3. The calcium chloride cost \$7 a ton; it also cost \$6 to pulverize and \$1 to apply. The total cost, therefore, was \$7.

From these experiments it was concluded that sodium chloride was 50 per



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435 Sixth Ave., Pittsburgh, Pa.

cent as efficient as calcium chloride; the cost of sodium chloride was about 43 per cent of that of calcium chloride.

This higher cost of calcium is largely on account of the necessity of pulverizing. Manufacturers of calcium chloride say you can crush by machinery; however, if we consider that a mine of 500 tons' daily capacity would only use about five tons each winter, it is evident that it would hardly pay to erect a crusher. In a plant of, say, five mines, with a total daily output of 3,000 tons, there would not be necessity for the use of more than 50 tons in a season. This is also too small a requirement to make the erection of a crusher advisable.

The manufacturers also say that the salt should be liquefied, and then pumped on with a spray-pump from a water-box. This cancels the factor of taking out the moisture in the mine atmosphere, and is costly.

I therefore deduce these facts: 1. The calcium chloride will collect moisture faster than the sodium chloride; 2, calcium chloride retains moisture longer; 3, in spite of these facts, common salt is cheaper; 4, extra cost is caused by calcium chloride coming in a solid; 5, a 700-pound drum is unwieldly and difficult to handle in a mine; 6, both salts should be sown on dry, not sprayed; 7, common salt comes in small barrels and can be put on for \$2 per ton; 8, calcium chloride should be put up in 200-pound packages that it may be easier handled; 9, watering carts are a nuisance and a hindrance to the transportation of the coal in the day time and a costly method at night, without supervision; 10, calcium chloride manufacturers should powder the salt so that it may be sown on at any time.

I believe a careful observance of these suggestions will make calcium chloride an ideal dampener for coal dust, causing it to be efficient, clean, sanitary and cheap.

NEW CONSTRUCTION.

Scotia, N. Y. — O'Connor & Walsh, of Schenectady, have secured the general contracts to construct a plant for the Mohawk Foundry Company. Foundry building, 40x100 feet, brick; machine shop, 30x40 feet, and coreroom, 21x21 feet. Architect, L. Rodman Nichols, 208 South Center street, Schenectady.

Rochester, N. Y. — The Selden Motor Car Company has been granted a permit for a two-story brick, 61x207-5 feet, factory building to be constructed in Probert street, near the New York Central tracks, at an estimated cost of \$43,000.

Jersey City, N. J. — Building operations will be commenced immediately on the two fireproof warehouses which Manning, Maxwell & Moore, of Manhattan, will erect at Communipaw avenue and the Morris Canal. The buildings are to cost \$90,000.

Schenectady, N. Y. — Shear & Wilson, of Schenectady, have received the



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general contract to erect the fireproof brick, steel and concrete foundry buildings on Albany road, Schenectady, for the Climax Specialty Company, of Seneca Falls, N. Y., to cost about \$50,000. Oren Finch, 437 State street, Schenectady, is the architect.

Oswego, N. Y. — W. H. Ives, Oswego, N. Y., will build an automobile factory in East Main street, 40x190 feet, with wing 40x93 feet. Considerable machinery equipment will be installed.

Jamestown, N. Y. — The American Carving works, Jamestown, N. Y., is preparing for the erection of a two-story brick factory, 32x64 feet. It will require machine equipment.

Niagara Falls, N. Y. — Work has started on rebuilding the plant of the Niagara Pulp Board Company. Braas Brothers, of Niagara Falls, have the contract. Including the price of some machinery which the company will have to purchase, the contract involves an expenditure of about \$40,000. The plant will be in operation by December 1.

Glens Falls, N. Y. — The American Safety Lantern Company has broken ground for one of the most modern factories ever erected in this vicinity. All supporting members, the roof, girders, beams, foundation wall and floor will be of reinforced concrete. The Gabriel Concrete Reinforced Company, of Detroit, is supplying the steel and also furnished the plans.

Oswego, N. Y. — The officers of the Diamond Match Company announce that they will build an addition to their local plant 69x125 feet, two stories. It will be of brick, steel and concrete, as nearly fireproof as possible. Plans are in the hands of contractors, who must agree to have the building inclosed by Thanksgiving.

Norwood (Independent Station, Cincinnati), Ohio. — The Nimmo Fence & Wire Company, Spencer avenue, Norwood, will erect one-story factory building, 125x240 feet, to cost, including site, \$25,000.

Atlanta, Ga. — Southern Iron & Equipment Company, E. P. Kern, president and general manager, office, 271 Prudential building, will erect complete foundry for brass and iron, to be operated in connection with locomotive shops.

Tonawanda, N. Y. — The McKinnon Chain Company, is the name of a \$1,000,000 concern which has purchased five acres of property on the east bank of the Ellicott Creek south of Fremont street. L. E. McKinnon, of Boston, is president. One large factory, 80x300 feet, is to be constructed immediately. A transformer power plant is to be erected also. Both structures will be of steel and brick with concrete roofs. The company is to manufacture all kinds of chains, using electric power for welding. Morris & Allen, of Buffalo and North Tonawanda, has the contract.

Ashtabula, Pa. — Riley Johnson, 39 Nathan street, was awarded the contract for erecting a brick and steel electric plant addition, for the Ashtabula Electric Light Company. Plans by Architect George Hall.

Bowling Green, O. — The brick work has been started on a one-story factory addition, being erected for the Monarch Knitting Company, by Contractor J. Simonds.

Dayton, O. — Excavations have been

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started for a \$25,000 frame freight station, to be erected on First and Webster streets, for the Erie Railroad Company, by Contractors F. A. Requarth Company, Sears and Monument streets.

Portsmouth, O.—Foundations have been started for a three-story brick manufacturing building, to be constructed for the Mitchell Manufacturing Company, from plans drawn by Architects A. B. Alger & Sons. Cost \$30,000.

Toledo, O.—Architect D. L. Stone, 405 Valentine building, awarded to Joseph E. Kesting, 161 East Broadway, the contract for erecting a one-story brick manufacturing plant on Bassett street, for

the Buckeye Clay Pot Company. Cost \$15,000.

Bucyrus, O.—Excavations have been started for a one-story brick and frame manufacturing plant, to be erected for the Bucyrus Bending Works, by Contractor Frederick Messner.

Cleveland, O.—Architect Franz Warner, 314 Citizens building, is taking bids on building a three-story brick fireproof dry kiln, on West Third street, for the Martin-Harriss Company, to cost \$6,000.

Fremont, O.—Robert W. Lysle, Fremont House, is taking sub bids on constructing a brick, concrete and steel hy-

draulic power plant, for the Fremont Power & Light Company.

GERMAN TOOL INDUSTRY.

Still Bewail the Large Import Business From America.

At a recent meeting of the Union of German Manufacturers of Machine-Tools, says London Engineering, some interesting information was given about the state of this industry, which several German firms have pushed with much



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1907	2,129,000	4.36%
1908	4,535,000	8.89%
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ability and energy. The general depression, says the report, made itself still more felt during the first months of the present year than during the last months of 1908. In spite of a more favorable money market, and notwithstanding an increased activity in the building trade, confidence in the future has not yet manifested itself in most industrial branches. Still a demand for machine-tools exists both at home and abroad, as is proved by numerous inquiries; but most of these have reference to more distant requirements, and their benefit for the time being is principally of a negative nature, inasmuch as they give both the bureau and the manufacturers a good deal of trouble, but so far only very scanty employment. This state of affairs has brought the prices to a very low level, in addition to which many makers have to manufacture for stock in order to keep their skilled men, and in the hope of being able to execute orders, when times improve, promptly and at somewhat better prices.

To make the present position still worse, many buyers of machine-tools make it a condition that the vendors of the latter shall give counter orders for materials for part, or in some cases even for the full amount, an arrangement which is all the more awkward, because the material plays a comparatively small part in the cost of machine-tools. Besides, the materials, especially pig iron, have become cheaper, while wages and other expenses keep on increasing from year to year. Although it has been said that the commercial treaties benefit German industry, this opinion cannot yet be indorsed by the makers of machine-tools. Time and normal conditions for business will show whether or not the foreign market will make itself more independent of Germany (and other countries) by extending the home manufacture. Taking the present state of affairs into due consideration, the hope is expressed that the negotiations with the United States will safeguard the interests of the German makers of machine-tools against the still considerable import into Germany of American machine-tools, owing to the low duty in Germany, although the home-made tools admittedly are equal to, and in some cases superior to, the American. The hope is also expressed that the German government will duly watch and protect the German interests as against the endeavors of certain French Chauvinists, and that the new Swedish tariff, to be dealt with by next year's Riksdag, will place no material difficulties in the way of Germany's trade with Sweden in this branch, which must not be under-rated.

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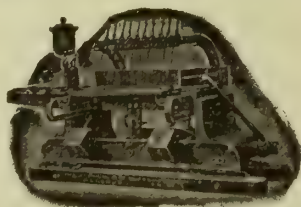
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AND BESSEMER PIG IRON

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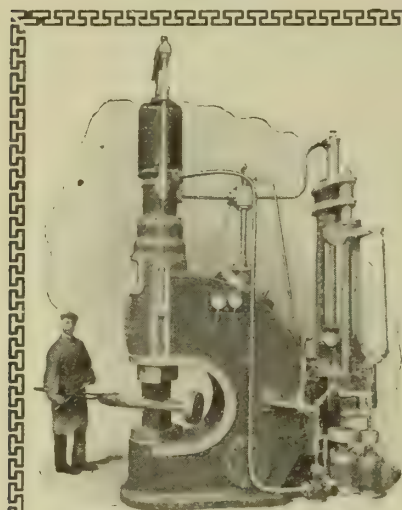
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PITTSBURG, PENNA.



STEEL SHEET PILING

The photograph shows 12-inch 40-pound United States Steel Sheet Piling, driven at Carrie Furnaces, as a permanent retaining wall, for the engine foundations, to prevent lateral displacement of silt by the weight of the foundation and the ingress of water from the Monongahela River.

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KEWANEE UNION

Only Article Specified

¶ A representative recently called upon a foreman of a Railroad Shop in the Middle West, and on presenting the merits of the "KEWANEE" UNION was informed by the General Foreman that he was fully acquainted with the merits. He said:

"When ordering I always specify the 'KEWANEE' UNION, and that is the only article I ever specify. When I order other goods (that is, valves, etc.) I simply specify the service for which they are required, and the Purchasing Department sends whatever they desire; but in the case of Unions I do not want any union but the 'KEWANEE.'"

¶ The above case is typical; there are many other mechanical officials who do the same. They have become acquainted with the specific merits of the "KEWANEE" UNION, and are well aware that there is no other union having the good features possessed by the "KEWANEE" UNION. Among these good features may be mentioned the following:

(a) Brass to iron thread connection at the ring. Brass to iron will not rust together, and the joints can be disconnected and reconnected without injury. An iron to iron joint will rust together, thus unfitting it for further service.

(b) Brass to iron ball joint seat. A joint of two different metals (that is, a hard and a soft metal) is better than a joint made of two soft or two hard metals.

(c) The "KEWANEE" UNION consists of three solid parts only; there are no inserted parts to become loose by unequal expansion or contraction.

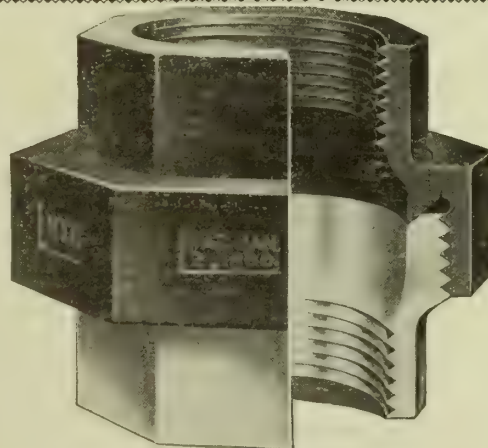
(d) When after years of service, the "KEWANEE" UNION has earned the repose of the scrap pile, the brass end has a substantial scrap value.

(e) Every "KEWANEE" UNION is tested with 100 lbs. compressed air under water; the slightest leak shows on the water in the form of a bubble, and any defective union is scrapped. The practical value of this test is that every union sent out is perfect, and there is no necessity to make up a joint in a difficult or almost inaccessible place and then find on testing out that the joint is imperfect.

¶ If you have tried the "KEWANEE" UNION no words are necessary to convince you of the merits. If not, we will be glad to send literature and to have you secure a sample lot through your regular source of supply.

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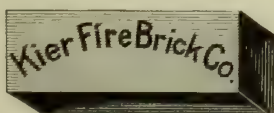
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TELPHERAGE.

Link-Belt CompanyPhiladelphia.

TIN PLATE MACHINERY.Cincinnati Punch & Shear Co., Cincinnati
Mackintosh, Hemphill & Co.Pittsburgh.
Mesta Machine Co.Pittsburgh.**TIN AND TERNE PLATE.**American Sheet & Tin Plate Com-
panyPittsburgh.**TANKS.**Meehan Boiler & Con. Co. Lowellville, O.
Petroleum Iron WorksSharon, Pa.
Riter-Conley Mfg. Co.Pittsburgh.
Wm. B. Scaife & Sons Co.Pittsburgh.
Struthers-Wells Co.Warren, Pa.**TOOL STEEL.**McKenna Bros. Brass Co.Pittsburgh.
Wm. Jessop & Sons, Ltd.New York.**TRANSFER CRANES.**

Industrial Works.Bay City, Mich.

TRANSMITTING MACHINERY.C. O. Bartlett & Snow Co.Cleveland, O.
Link-Belt CompanyPhiladelphia.
Mesta Machine Co.Pittsburgh.
Morse Chain Co.Ithaca, N. Y.**TREADLE OPERATED CONTROLLERS.**Cutler-Hammer Mfg. Co., The
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Electric Con. & Mfg. Co.Cleveland, O.

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National Tube Co.Pittsburgh.

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.....Pittsburgh.**WIRE WORK.**McKenna Bros. Brass Co.Pittsburgh.
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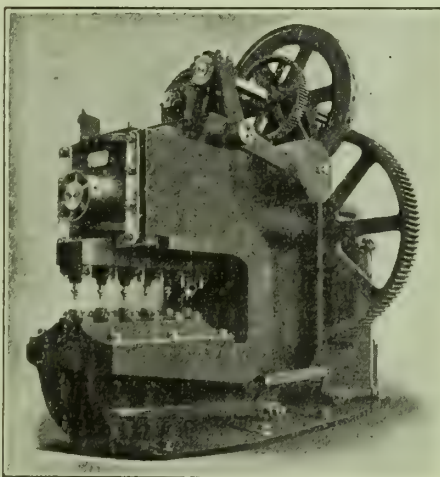


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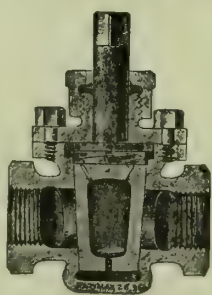
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